MAY
1922

VETERINARY MEDICINE

4753 GRAND BOULEVARD
Chicago

Studies on Periodic Ophthalmia

The Sterility Problem as It Confronts the Practitioner

The Relations of the Fallopian Tubes to Sterility in Bovines

Necrotic Enteritis in Swine

Goitre in Pigs

Round Worms in Pigs

Parasites in Small Animals

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Zootechnic Notes, News, Association Reports and Fifty-five Other Articles

TABLE OF CONTENTS, PAGE 4
ADVERTISERS' INDEX, PAGE 18
LIST OF ASSOCIATION MEETINGS, PAGE 16

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Vol. XVII Contents for May, 1922 No. 5

EDITORIAL: 209
Our Mercenary Trend Harms the Profession 209
The Quarrel with the Farm Adviser 210
Throwing Monkey Wrenches Into Our Own Machinery 211

GENERAL PRACTICE—Edited by W. J. Martin and L. A. Merillat 213
Studies on Periodic Ophthalmia in the Horse—What Autopsies Disclose.

PURELY PRACTICAL 222
Two Signs of Approaching Death—A New Extractor.

CATTLE PRACTICE—Edited by J. F. DeVine 223
The Fallopian Tubes—The Problem of Sterility as It Confronts the Practitioner.

SWINE PRACTICE—Edited by A. T. Kinsley .....
Necrotic Enteritis—Goitre in Pigs—Diet Causes Pig Losses—Renal Lesion not Pathognomic—Porcine Mange.

LABORATORY DIAGNOSIS—Edited by C. A. Zell 231
Fibro-Myxoma of the Liver of a Cow—Infected Milk—Black Leg, Organism Not Found—Suspects Forage Poisoning—Chicken Cholera—Hemorrhagic Septicemia—Probably Ascaridosis—The So-called Spontaneous Rabies in Dogs—Vaginal Granuloma.

ABSTRACTS OF FOREIGN LITERATURE—Edited by A. Eichhorn 233
Diseases of Colts—Swine Ersipelas Infections in Man—The Intravenous Treatment of Nervous Diseases with Pregl's Solution—Presence of Hemoglobinphilic Rods in Canine Distemper—A Simplification of the Cutaneous Tuberculin Test—The Prevention of Tuberculin Reactions by Serum, Transudates and Exudates—Cases of Borna's Disease.

PARASITOLOGY—Edited by Maurice C. Hall 235
Round Worms in Pigs.

ZOOTECHNICS—Edited by E. Merillat 239
Interest in Purebred Sires Doubled During Past Year—Jacks Ten Per Cent Below Stallions—Feeds for Farm Horses—What Is Fresh Air?

LIVE STOCK POISONING—Edited by L. H. Pammel 241
Supposed Forage Poisoning—Moldy Corn—Weeds in Alfalfa Hay—Plant Dermatitis.

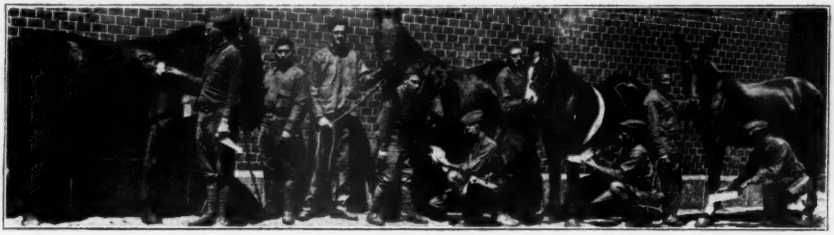
CANINE, FELINE, AND AVIAN PRACTICE 251
Parasites in Small Animals—Follicular Mange in a Dog—Prescriptions for Dogs—Investigations on the Prevalence of Avian Tuberculosis and Its Control with Avian Tuberculin—Avian Tuberculosis.

QUERIES AND ANSWERS 255
Premature Lactation in a Mare—Oxalic Acid in Azoturia—Treatment of Suppurative Mastitis—Blister for Declining Lactation—Formula for Panting Horses—Articular Tuberculosis in Pigs—Filaria Oculi—Thrombosis of the Iliac Artery—Liquid Blister—Indigestion in Sheep—Bacterins Blamed—Mule Needs No Doctor; Treats Self.

POINTED DISCUSSIONS OF LIVE TOPICS .....
Infectious Alopecia 259
Recovery of a Very Acute Case of Tetanus in a Mare 261
Chronic Gastritis 261
Foot Rot in Sheep 261
Fatalities After Dehorning 262
Unknown Disease Kills Many Ewes in Kentucky 262
An Opinion of Turpentine 263

Veterinary Medicine

Vol. XVII MAY, 1922 Number 5



Enlisted Men of the Veterinary Corps, A. E. F., 1918

Editorial

OUR MERCENARY TREND HARMS THE PROFESSION

The veterinary profession of the United States might do worse than take warning from the fate of the Romans, who after crowning their nation with splendor and prosperity fought among themselves until the whole fabric of the nation broke down and had to be entirely effaced from the earth before anything better could replace it.

A few years ago a selling concern entering the veterinary field announced its intentions to sell only to graduate veterinarians. It was a laudable commercial departure, and we suspect, a good trade policy. This organization and others, which afterward adopted the same policy, we have good reason to believe were sincere and we know that they are sincere now.

But, unfortunately, this original and unique idea was soon pirated by others, who naively sought the advantages of the idea without intention to actually live up to it. By placing their wares in the hands of others than graduates such concerns hurt the profession by breeding discontent, hatred, and strife, disrupting harmony, monopolizing attention that should go towards constructive issues, and all without a jitney of gain to anyone but themselves, the non-graduate, the herdsman, and the ambitious layman, whose activities as psuedo-practitioners were on the decline, but who are now being impressed with their importance through the growing belief that veterinary practice, after all, is nothing more than a matter of supplies.

Quackery Profits by Our Folly

Ten years ago quackery was dying out in the veterinary profession; except in outlying districts it was fast being forgotten; it was seldom mentioned in veterinary associations; today it has taken on new life under our own stimulus. Many laymen are beginning to believe they can treat domesticated animals as well as the trained veterinarian. The quack thinks so, the farmer is beginning to believe it, and many a farm adviser is sure of it. For this trend we have only ourselves to blame. We are particularly to blame if we continue to march blindly to the jazz of those who blow the horn of discord for mercenary gain and never can be caught lifting a finger of helpfulness toward the uplifting and protecting movements so sorely needed by the practitioner today.

Formerly, quackery was dying out because it was being ignored; today it is being revived because we are giving it publicity. The more an evil influence is advertised the more importance it assumes.

By classifying ourselves we imply there are others. By making drugs and biologics available to others than the veterinarian, there has been established a desire on the part of unqualified persons to use these armamentaria which, after all, constitute only one of the

many factors necessary to the successful treatment of animals, and which entirely lack value unless associated with the necessary educational qualifications.

Education Discounted

But this is not the worst. The entire matter must be handled in such a manner that, by preventing the sale of drug mixtures, biologics, operating tables, journals, books, and instruments, to anyone but ourselves, we shall not convey the impression that successful practice depends solely upon our ability to obtain these supplies. In other words, we must not allow the impression to prevail that success as a veterinary practitioner is simply a matter of supplies instead of a matter of education. In fact, any attitude other than this would be a pretense.

The policy of selling only to graduates is good, both for the profession and the commercial establishments who follow the same. There is nothing to be gained, however, by the practitioner publicly proclaiming that he is a preferred individual who can buy something that the other fellow cannot obtain, and thus expose this part of our enterprise to the scrutiny of the outsider and all of the while forgetting entirely that our very life depends upon driving home the thought that successful practice is a matter of education, training, experience and honesty of purpose—the thought that prevailed before our heads were turned—the thought that raised us from obscurity—the thought that once differentiated us from the empiric.

Any one in the United States who has the price can obtain any veterinary, medical or other journal published, any instrument or any drug, not even excepting the intoxicants and narcotics prohibited by law, although obtaining these may offer some difficulty to the inexperienced. It is nothing short of ridiculous to make claims to the contrary.

The professional man's advantage lies in his superior ability to use these tools and not, let us repeat, in his ability to obtain them. It is the brains that count.

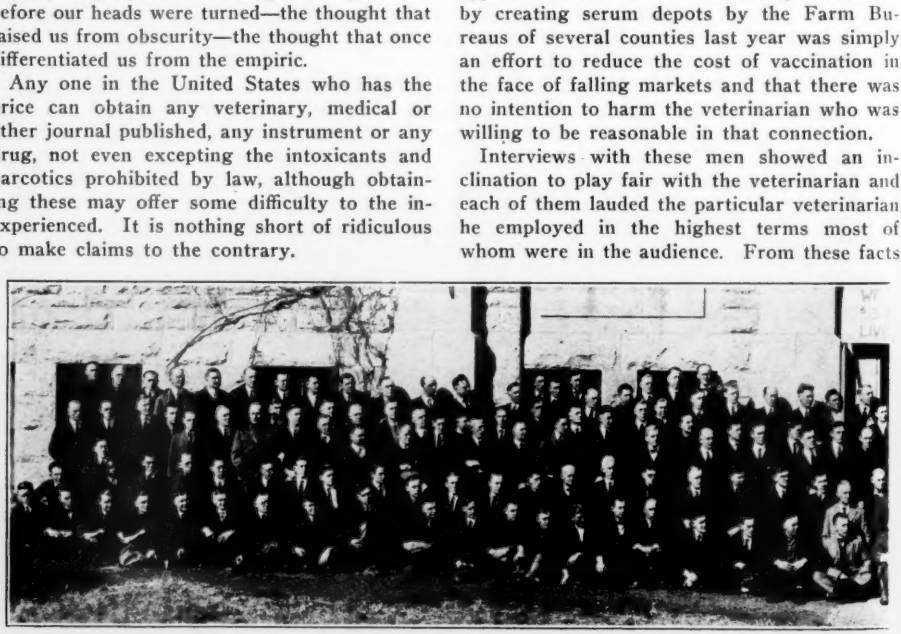
It will indeed be a misfortune if we do not extricate ourselves before it is too late, from the lure of an influence that tends to perch mercenary thoughts above professional ideals. If we cannot be big, let's not be silly. There is no sincerity in the claims of many who proclaim their devotion "to the profession." Too many are simply trading upon prejudices, and every one, the practitioner first, will pay the penalty in the end.

THE QUARREL WITH THE FARM ADVISER

The troubles we are having in the matter of hog cholera vaccination are modulating in some quarters and intensifying in others, modulating where a give and take attitude has been struck and intensifying where both sides remain stubborn.

At Monmouth, Illinois, March 20, 1922, the executive committees of the Farm Bureaus of six counties and two farm advisers met with members of the Mississippi Valley Veterinary Medical Association to discuss the situation in western Illinois and while no attempt was made to reach a definite agreement it was apparent that the whole controversy that ended by creating serum depots by the Farm Bureaus of several counties last year was simply an effort to reduce the cost of vaccination in the face of falling markets and that there was no intention to harm the veterinarian who was willing to be reasonable in that connection.

Interviews with these men showed an inclination to play fair with the veterinarian and each of them lauded the particular veterinarian he employed in the highest terms most of whom were in the audience. From these facts



First Annual Veterinary Conference

it would seem that the veterinarian and the swine owners of this region are within the reach of an understanding that will end this controversy for all time.

Where veterinary service is ably and honestly performed and where the give and take principal prevails there is indeed little chance for serious friction between client and veterinarian since the personal equation is the governing power that cements them together, but where there is greed on the one hand and stubbornness on the other, friction and ruptured relations are bound to obtain.

As the veterinarian is the employee and the other the employer it is only natural that the former must take the initiative in whatever reasonable condescension may be necessary to bring about a return to the old status. In short the relation of veterinarian to client should be so close and friendly that no intruder appearing on the scene can change or disrupt them.

In spite of impression to the contrary almost every farm adviser whom we have interviewed has no quarrel with the veterinary profession and only in few cases with individual veterinarians. We have yet to be convinced that the farm adviser is not more of an asset than a liability to veterinary practice except in isolated instances where this new office is being abused because its duties have never been sharply defined. When the farm adviser is older and has had time to distinguish between professionalism and commercialism matters will go better. It is necessary for us to endure some hardships imposed during the interim the farm adviser is learning that it is for his scientific knowledge and not for his commercial acumen he is being employed, and it is our prediction unless this is learned his enterprise is riding blindly for an ugly tumble when it reaches the hurdle of American business interests.

If the farm adviser insists on handling all the coal, all the fertilizer, all the spraying material, all of the rat poison, all of the hog serum, etc., etc., used in his realm, there will soon not be enough taxable property left to pay his salary.

THE VETERINARY SERVICE IN THE FRENCH ARMY DURING THE WAR

One of the most prominent veterinarians of France, LeClainche, subjected the veterinary organization of the French Army in the spring of 1917 in the Revue Gen. de Med. Vet. to a critical review. The veterinary service at the outbreak of the hostilities was not organized. This service was considered for the purpose of war, unimportant. Up until 1917, no great progress was made with the organization. While all branches of the service under the pressure of emergencies discarded the obsolete methods, yet the veterinary service continued its functioning under the former methods and regulations. The reporter also complains on the wrong placement of the veterinarians. The depots for sick animals were poorly organized. They were directed by military heads. The veterinary service had no technical direction. The veterinary inspection had no personal knowledge and the numerous experiences which were gained daily through the war were not collected and utilized. Finally LeClainche suggested a reorganization of the service which centers upon the advice that the veterinary inspection should be charged with the technical direction, particularly so with regard to hygiene, the treatment of animals and the utilization of animal products.

Kansas State Agricultural College, Feb. 7-10, 1922

Editors' Personal Page

Vaccinate the little pig this spring. It means success for you and profit to your clients.

"I have small use for them that's seeking to offend no one. If you're in the richt the man who takes offense need not concern you."—Harry Lauder.

There is no substitute for milk and butter. Substitutes are frauds that enrich a few at the expense of health and racial physique.

Food substitution of all kinds is commercial chicanery that takes its toll in money, indigestion and undernourishment of the deluded.

Let us see. Vaccination against tuberculosis and other chronic diseases is said to be effectually as long as the living vaccine organism is extant in the body of the vaccinated. Is it not therefore probable that the bovine type is actually protecting the human family against annihilation.

Although the "vaccination" is sometimes pretty severe it seems to be a question whether the few cases of articular tuberculosis of bovine origin is not a good vaccination against the demon human-type that makes such short work of its unprotected victims.

"Truth is merit, is not capable of modification, is not adapted to the machinations which would enable her to win her way into the hearts of man" while "Falsehood, on the other hand, possesses the most wonderful resources." Fortunately truth prevails in all large projects in the end.

Boost the use of:—The horse, the pure-bred sire, milk and butter, meat, semi-solid butter milk and minerals.

All other things equal there is said to be no appreciable difference in the amount of infantile tuberculosis between the milk-drinking and the non milk-drinking nations.

THROWING MONKEY WRENCHES INTO OUR OWN MACHINERY

The Dairymen's League and Co-operative Association whose headquarters are at Utica, New York, now handles $8,000,000 worth of milk per month and expends as much as $30,000 a month for straight newspaper advertising. Besides it conducts a continuous campaign of publicity through bulletins, booklets and leaflets addressed to the public with the object of making milk products more popular.

These campaigns of advertising have brought about a much improved state of public opinion with regards to the healthfulness and indispensibility of milk as well as a better understanding between milk producer and milk consumer.

The National Dairy Council with headquarters in Chicago is engaged in the same work, devoting most of its effort to propaganda in behalf of milk products. Its work is supported by milk distributers, milk producers and public welfare organizations.

Besides these two large organizations, there are many smaller ones all devoting a great deal of effort and all expending large sums of money with the one purpose of showing a previously deluded public that it has misjudged milk as to its food value. Among these are the New England Dairy and Food Council, the Ohio Co-operative Milk Company of Cleveland, the Philadelphia Inter-State Dairy Council and the extension branches of some of the agricultural colleges. A total of more than $55,000 was spent on advertising in Philadelphia alone between January 1 and October 1, 1922.

Educational Campaigns on Milk Consumption

Then again, experts are conducting nutritional classes in the public schools in many cities, making surveys of undernourished and underweight children and in general carrying on a fine public service approved by the highest authorities. These educational campaigns already have driven home the incontrovertible truth about the necessity of an increased consumption of milk, cheese, butter, butter milk,

(Continued on page 258)

General Practice

Edited by W. J. MARTIN, Medicine, and L. A. MERILLAT, Surgery

Studies on Periodic Ophthalmia in the Horse

First Contribution

By Augusto Bonazzi and Edward Merillat, Wooster, Ohio, U. S. A.

ETIOLOGY AND MORBID ANATOMY

THE eye disease of the horse known commonly under the name of moon eye, blue eye or periodic ophthalmia is possibly known to every practicing veterinarian for two distinct reasons: (1) lack of a typical complex of symptoms which will permit the early diagnosis, and (2) its relatively endemic nature.

The second of the two above assertions is proved by the fact that a statistical study of the prevalence of eye affections in the equine population of a specific locality is seldom of value in other localities, a fact that leads to the hypothesis that eye disturbances are endemic in character. A review of the limited literature on the subject of periodic ophthalmia in the horse reveals the fact that opinions vary as to reasons for this apparent endemism. This review also shows the meagerness of our knowledge of the question.

In 1917 Avery (Journ. Amer. Vet. Med. Assoc. 51; 78-81, 1917) claimed that he had proved the transmissibility of the affection not only by experimental means, but that he had observed it to be transmitted from one horse to another during the process of play. Again recently Dalling (Vet. Journ. 75: 16-24, 1919) isolated from the optic nerve of horses, suffering from an attack of specific ophthalmia, an organism which he names for convenience "nerve bacillus"; an organism towards which,

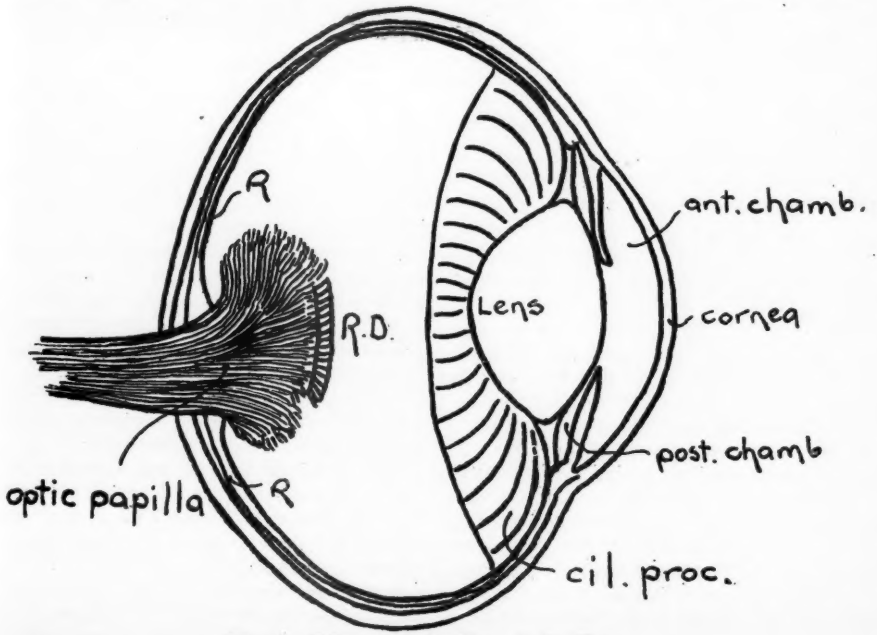


Fig. 1. Scheme of the Eye of the Horse

he claims, blood of affected horses possesses an agglutinative power. Knowles (Journ. Comp. Path. Therap. 32: 192-196, 1919) states that he was unable to confirm these last findings of Dalling. In a recent review of the subject, Savage (Canad. Veter. Rec. 1:20-23, 1920) adds little new to the subject but although not apparently clear on the path followed by the disease he does nevertheless point to the inadequacy of the term "periodic ophthalmia."

It is the object of this first contribution to remove this condition of indefiniteness from the affection and establish if possible the true picture it presents at its various phases of development, so that future work may be based on a definite and known symptomatology.

In view of the above considerations several questions of extreme importance require solution: (a) what are the conditions which favor the inception and distribution of the disease, (b) what are the paths of distribution and, (c) what is the immediate cause of the affection?

It is a matter of common knowledge that animals bearing pronounced symptoms of eye disorders are used for breeding purposes, and aside from the fact that this practice is faulty from the zootechnic standpoint, it may offer one of the paths for the distribution of the disease. Coupled with this may be mentioned the fact that there is a practice on the part of the owners of infected animals to dispose of their stock by an immediate and often fraudulent sale. It may here be mentioned also that this sale is frequently encouraged and, in fact, often urged by the attending veterinarian. It stands thus to reason that with such a promiscuous and wholesale distribution of affected animals in a region, the disease, if it were to prove of an infective character, can but be propagated from these innumerable new foci. These considerations may furnish a priori an answer to the first of the above questions.

Unfortunately, any satisfactory answer to the third of the above questions is not available, and again this is especially ascribable to the lack of careful and systematic observation on the part of the practicing profession.

With regard to the distribution of the eye affection in the equine population of Wooster and immediate vicinity, a census taken of random horses showed it to present pathological conditions in as much as fifteen per cent of the several hundred horses examined. It may, nevertheless, be stated that the figure thus obtained may be slightly lower than would have been obtained by an official census.

Experimental

From a clinical standpoint the progress of the disease may be summarized as follows: The early stage of the disease is characterized by an abundant non-purulent lachrimation followed after a lapse of time, variable in different cases, by a clouding of the aqueous humors. Slow but progressive clearing of this fluid may lead to an apparent recovery, but this normal condition may again become disturbed by a repetition of the sequels presented during the first attack. The attacks, often repeated during the course of one or more years, lead to a malnutrition of the lens, opacity and an intraocular pressure with resultant distention of the iris in the anterior chamber leading to disintegration. Fig. 2 pictures an eye (case 2) at this stage of the affection.

Fig. 2. Eye in Early Stage

Finally the lens becomes completely dislocated and either projects into the anterior chamber as is pictured in Fig. 3 (case 6) or disappears in the fundus of the eye. This last condition has been mentioned by Savage in his review.

It is worthy of note here that the cornea preserves in most cases its transparent and normal aspect throughout the affection, although occasionally a slight keratitis may establish itself. This was observed in one out of many dozen animals examined in the present investigation. Occasionally, and especially in experimental inoculations, a pronounced marginal keratitis may establish itself at the periphery of the cornea and extend one or two millimeters from the corneo-sclerotic line towards the center of the eye. Nevertheless, opacities of the cornea are extremely rare and when observed they appear to be due to the adhesion and abrasion, by the hardened lens, on the Descemet membrane. These conditions are apparently quite distinct from those de-

scribed by Osborn and Mendel and by Isabel M. Wason (Journ. Am. Med., 76-905-912, 1921) in ophthalmia associated with deficiencies, in the diet, of fat soluble vitamine A.

From what has been stated it appears therefore that the affection is often of extremely long duration and unfavorable prognosis. The second part of this first contribution dealing with the zootechnical phase of the subject will serve to emphasize this statement.

Transmissibility Not Shown

Of the questions which were advanced in the preceding pages, the one relating to the transmissibility of the affection has as yet received no answer. Avery related (l. c.) that the condition of periodic ophthalmia could be transmitted in some cases by inoculation of aqueous fluid from an effected eye into the anterior chamber of a healthy eye. According to his findings, transmission may also take place by simple contact, and without apparent trauma to the organ. In our own experiments material taken with sterile syringes from the anterior chamber of an effected individual (case 2) and introduced into the anterior chamber of a normal eye failed to reproduce the typical pathologic symptoms (case 3).

Injection of the material into the conjunctival sac failed also to give rise to the typical symptoms complex. In this connection it may be mentioned that also Avery found cases where transmission by inoculation into the anterior chamber failed to give results. In view of these contradictory results it is evident that the disease if transmissible, a fact proved by the positive results of Avery, it is only so at some special stage of affection. In view of the widespread occurrence of the disease in some regions some of these contradictory results could be explained also by means of an individual resistance, natural or acquired, after contact with an infected herd. Nevertheless, this possibility, although theoretically possible, is as yet open to experimental proof and cannot be invoked here. In fact, animals which will resist injection of pathogenic material from a diseased eye may later present typical disurbances after injection of a pure culture of an organism isolated from these same infected eyes.

In order to understand the actual rôle of an infecting agent, if such were to be found, in the various stages of the disease, a survey seems necessary of the various pathologic conditions found at the various stages of its progress. As has been seen in the study of the progress of the external symptom complex, and as will be seen again later, the conditions that characterize the various stages are distinct and range from a mild indisposition of the animal to complete blindness with a frequent repetition of the incipient sequels.

These externally visible symptoms are accompanied by a whole set of internal conditions and changes which are directly responsible for the appearance of the clinical. In fact, many internal changes have taken place before a sufficient intraocular pressure is obtained sufficient to give rise to the typical malnutrition and opacity of the lens, visible on gross examination. Specimens of our possession seem to justify the following interpretation of the path followed by the disease.

The Path of the Disease

This path may be subdivided into a phase of inception characterized by lachrimation, opacity and the aqueous and incipient involvement of the vitreous: slow haemmorrhage into the vitreous chamber from the choroidal layer with formation of a red cloud on the internal face of the lens, a cloud which is often visible to a cursory examination of the living animal.

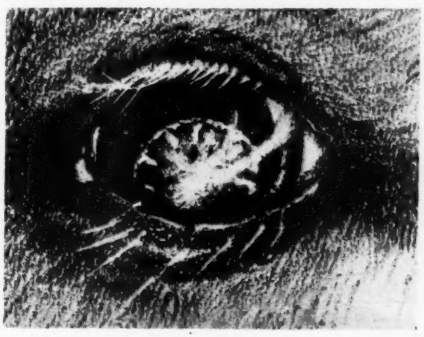


Fig. 3. Anterior Displacement of Lens

This condition is followed by a formation of a jelly in the vitreous chamber permeated by hematocytes and forming a pseudomembrane closely fitting the posterior capsule of the lens. This jelly acquires a stiff consistence and produces the intraocular pressure that finally leads to the reachment of the lens through the rupture of the suspensory ligament, it penetrates the anterior chamber in the long run, while penetrating between the choroid and the posterior surface of the retina it completes the detachment of this organ as is diagrammatically shown in Figs. 5, 6 and 7.

The final stage of resolution leads to the decomposition of the interior structures of the eye, a decomposition which appears not to involve the ciliary zone, as may be seen in Fig. 8. This zone is only slightly affected and shows only a pronounced increase in the number of lymphocytes in the lymph nodes.

Tumor-Like Lesion of Optic Nerve

A structure, the genesis of which is at present yet unexplained, is a tumorlike development at the proximal end of the optic nerve which has repeatedly been found protruding into the cavity of the eye. It is the belief of the authors that its appearance dates from the period of involvement. The optic nerve which has undergone a distinct change in structure

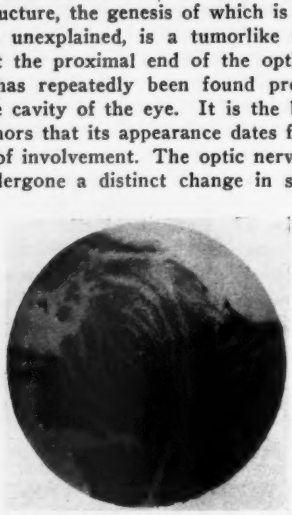


Fig. 4. Fibroma on Optic Disk

for a distance of a few millimeters (see Fig. 5) from the optic disk, protrudes in the vitreous chamber and is apparently checked after the entrance. Fig. 4 reproduces one of the several specimens in our possession that point to the tumor origin of the structure: the histology points to a fibroma development.

These changes in the structures of the eye with the advance of the disease find their cause in a deep-seated disturbance of the normal metabolism of the structures involved. The apparent transmissibility of the condition experimentally established in some cases by Avery seems to speak for a transmissible agent, and indeed this possibility has been more or less tacitly assumed by the profession.

Flora of the Conjunctiva

Cocci are frequent inhabitants of the conjuntival sac, and it is not surprising if they have often been found connected with material obtained from the surface of the cornea. As a matter of fact, the periodicity of the disease which seems to be one of its specific characters (although the periodicity is not at all always regular, as Savage has also pointed out) could be ascribed, on the basis of an infective agent, to one of the two following causes: (a) repeated infection, a hypothesis hardly justified in view of the pathologic picture presented by the patient, and (b) repeated activity of an organism harbored within the eyeball capable of overcoming the natural defense of the host or capable of passing relatively long periods of time in the inactive state intraocularly. This last hypothesis, which is indeed not a new one, becomes tenable on the basis of an infection by a spore forming organism. It would naturally preclude the intervention of the known micrococci. Again the possibility of a mixed infection presenting characters of a joint action of two parasites (commensalism) should not be rejected.

The relatively abundant flora of the normal cornea, conjunctiva, nose and mouth of the normal horse makes it evident that a study of all the possible sources of infection is an endless task. In the present contribution only such organisms will be studied as were obtained from the interior of the eye.

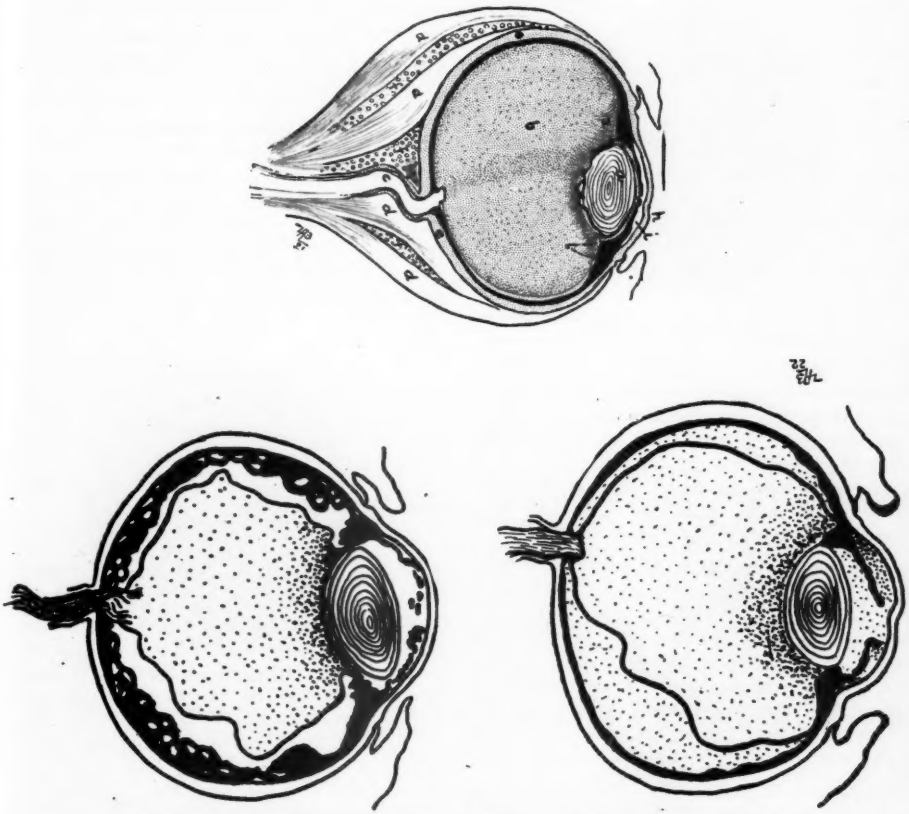
Flora of the Humors

The fluids drawn aseptically from the eye of the affected animal when studied immediately seldom show to a microscopic examination the presence of bacterial cells and in the majority of cases examined so far in the present investigation, both aqueous and vitreous fluids proved sterile to a direct microscopic examination. Occasionally a coccus growth would take place on cultural examination. Nevertheless it was soon found that in sampling, faulty technique may lead to erroneous conclusions. The other surface of the cornea may harbor numerous types of organisms and the ordinary means of disinfection of these surfaces seldom prove adequate. It is only after careful sterilization that significant results can be expected. To avoid these sources of error it has been our practice when obtaining samples for cultural examination from postmortem specimens to sterilize the outer surface by means of red hot irons. Only such specimens were used as had been obtained from the animals immediately after slaughtering.

Occasionally, however, the fluids from the eye when examined by direct microscopic examination may yield interesting results. Case 1 presented a typical picture of periodic ophthalmia in the final stage, according to

our classification mentioned above. The lens was completely detached while the aqueous and vitreous fluids had been completely replaced by a sanguinous fluid apparently derived from the decomposition of the jelly which lately had occupied the vitreous chamber. The animal had lost the use of the eye within a period of eighteen months and died after an attack of pneumonia of unknown cause. Unfortunately, an examination of other tissues of the body was not possible. Preparations made from this sanguinous fluid stained with Loeffler's methylene blue showed a pure culture of a single bacillary type. The individual cells were unevenly stained and presented granulations sometimes located polarly and at other time equatorially.

The fact that organisms may sometimes be found in the humors of the eye is shown by another case (No. 4), a six-year-old mare, which was blind on the left eye and was killed because of a tramatic injury to the left hind quarter. The left eye was completely opaque to the reflectoscope; although the lens was still attached, it was soft and presented evidence of disintegration. The cornea, ciliary zone and iris were found normal on autopsy. The vitreous fluid had lost its normal consistency but appeared yet distinctly transparent and colorless. The eye was therefore entering into the phase of involvement such as has been described above. Cultures made from the aqueous into bouillon and incubated for thirteen days failed to give any



Figs. 5, 6 and 7. Pathological States Due to Intraocular Pressure (Diagrammatic)
Legend of Color Plate: a, lens; b, jelly in modified vitreous; c, modified nerve; d, muscles; e, sclera; f, adipose tissue; h, cornea; i, anterior chamber. (Note pseudo-membrane on posterior surface of the lens.

growth. Bouillon was used in order to similate the normal conditions of the eye.

The right eye of this same animal, which appeared normal to examination in vivo showing a normal fundus to the ophthalmoscope, was also found apparently normal on autopsy. Nevertheless a sample taken from the aqueous by means of a sterile syringe, following the precautions outlined above, led to the isolation of an organism which will be here, for convenience, named Bacillus A. The salient points of the histopathology of this eye may be summarized as follows: The cornea, although normal to miscroscopic examination, was found the seat of a pronounced bacterial infection which, curiously enough, was not accompanied by leucocytic infiltration. This is well shown in Fig. 9, where the

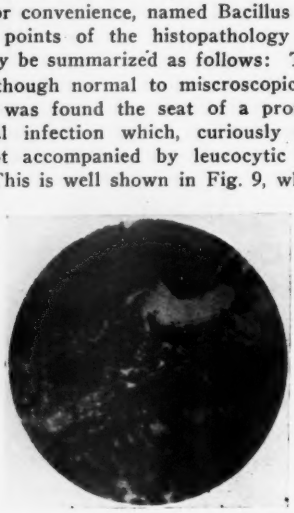


Fig. 8. Normal Ciliary Except for Increased Lymphocytes in Lymph Nodes

bacillary cells are seen mostly to occupy a position periclinal to the surface of the organ. The ciliary zone was apparently normal except for a slight infiltration of lymphocytes from the lymph node of the canal of Schlem. The optic nerve was found the seat of a pronounced bacterial infection similar to that found in the cornea and picture in Fig. 10.

The conclusions drawn from these findings as well as the findings obtained by the study of other cases in our investigation are to be summarized as follows: The eyes of horses affected by the disease commonly known under the name of blue eye or moon blindness, although failing to give good cultural developments on artificial media, are sometimes found to have an abundant bacterial flora easily demonstrated by a histological study.

In the following pages some experiments aiming at the artificial reproduction of the disease will be described, and although it is far from the intention of the present authors to claim that the organism isolated should be identified as the one causal agent of moon blindness in the horse, it is here described as the first one found in a number of eyes affected by the disease and therefore worthy of note. It is the hope of the authors to continue these studies and establish the etiological im-

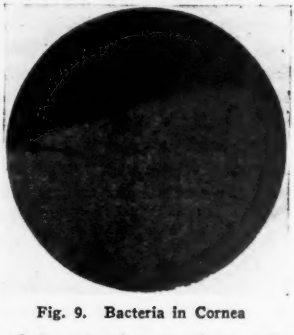


Fig. 9. Bacteria in Cornea

portance of the organism or of any other which might be isolated in the future.

Description of the Organism
Bacillus A

A rod shaped form 1.4-1.8u x 0.2-0.5u, somewhat variable in size, larger in living tissue than in culture, sometimes assuming a curved appearance. The staining properties of the organism is rather special. Such stains as Loeffler's methylene blue and Kühn's blue do not give good results, whereas aniline waters gen-

Fig. 10. Bacteria in the Nerve

tian violet, and carbolfuchsin one-half diluted with water give the best results: Gram positive. In stained preparation it appears granulated, the two or often only one pole appear occupied by a highly refractive body strongly retaining the stain. Cultures in bouillon acid or alkaline do not show growth within 48

(Continued on page 256)

What Autopsies Disclose

By E. V. Hover, Lima, Ohio

Foreign Bodies in the Bowels of a Mare

A GREY four-year-old percheron mare. I was called in the evening and found the mare in a chill, with temperature 104° and pulse 60 and respiration 30 per minute, surface of body and extremities cold. The diagnosis was congestive chill and the treatment stimulants and blankets. On my return the next morning, I was surprised that the temperature was up to 106° and the pulse fast and that it was a grave case, much like pneumonia.

As the lungs were sound I sought to determine cause of the distressed breathing. Let me confess I did not know what was causing these symptoms. There was quite a lot of gas in the hypochondrium and pressure just back of the region of the stomach on the right side created pain. Peristalsis was absent. I visited the patient again the same day and found the above symptoms more accentuated. The following morning I washed out her stomach because she was showing gastric disturbance and found when this was completed we were "doing something" to the patient and owner. Death took place that evening. The following morning we held an autopsy and found the trouble to be a wire that had penetrated the large colon and which had caused all of the pathological changes that go to make and absess wall. There was no general peritonitis. This case is cited because horses do not usually swallow foreign bodies. The case seemed like one of rupture of the bowel, excepting that there were no colicy pains. The mare breathed like a pneumonia patient, but there were no rales. There are times when intervention of man has little influence on the period between life and death.

Omental Strangulated Hernia in a Bull from Copulation

It has been said that rabbits sometimes faint, even men have done likewise during or immediately after copulation. Recently a bull was turned into a lot for his first service. His ambition was high. He leaped, he groaned, and the service was complete. His fatherly appearance was soon lost to one of utter dejection. The thoughts may have come to him that he has been mislead, or that he was in wrong. I was called to examine this new head of a family. I found him stretching, twisting his body, kicking at his abdomen, groaning, trying to roll when down, and in a general restless condition. My diagnosis was intestinal obstruction. I dosed him, irrigated him and plastered his belly walls with mustard, but that look of having gotten in wrong never left him.

The autopsy was interesting. In order to explain it is necessary to observe some of the splanchnology of the bovine. The greater omentum conceals the greater part of the intestine on the right side, with the exception of the duodenum, and covers the ventral sac of the rumen almost entirely. It is not lace-like as in the horse, and contains a large amount of fat in animals in good condition. It may be described as consisting of two layers or parts, each of which is composed of two layers of peritoneum; the serous layers enclose a variable amount of fat. The superficial part extends from the left groove of the rumen ventrally around the ventral sac. It ends along the retrograde part of the duoenum and the greater curvature of the abomasum. At this point there was a small rent in the omentum, through which a small loop of bowel had passed, causing strangulation of the bowel. This can correctly be called an omental strangulated hernia. The bull lived four days following this rupture and at no time did he show any temperature above 103°. After twenty-four hours there was little or no pain. There were no feces voided after the first day. Our supposition is that this hernia took place following the service above mentioned.

Foreign Bodies in Cattle

In cattle foreign bodies are rather common. In these days when bovine practice is receiving particular attention, more skillful diagnoses are made than in former years. We say that foreign bodies are relatively common. In the last year I have had six positive cases, and in a limited number of suspects upon which I did not hold autopsies. So far as is known no one has been able to state even approximately the length of time it takes a foreign object to cause clinical trouble.

The subject to be described below is one that sheds some light on the time that elapses between ingestion and the appearance of symptoms. A call came in to attend a Jersey heifer. The examination revealed cardinal things not much disturbed. There was inappetence, a

feeble grunt, less pronounced than in most cases. The animal received a purge, rumen and other stimulants. The medicament acted favorably, and after three days she was so improved as to start eating and ruminating. These physiological acts ceased after a few days and the owner decided to destroy her. The autopsy revealed a piece of wire protruding through the anterior wall of the rumen, into the diaphragm. Around the free end there was a small abscess wall, within which there was a small quantity of pus. The other end of the wire was a loop from a wire muzzle. The total length of the wire loop and all was about three inches. On questioning the owner he said that as near as he could remember the muzzle was found broken about two months before, having removed pieces from the manger at that time. I believe if this wire had had no loop it would have passed on to the pericardium. My diagnosis was atony of the rumen, but later I thought it might be pus formation in the liver, because the animal had become icteric.

An X-ray examination, a good picture, a skillful operator, and an anesthetist, a trained nurse, and a fee of 25 dollars might have saved this valuable life.

Urinary Calculus in a Colt

Urinary calculus result from deposits, or material deposited through the urine accumulating around hard substances, foreign bodies, clots of blood or masses of mucus, which have found their way into the urinary passages. Catarrh or inflammation of the urinary passages, therefore, give the first impulse to their formation. Calculi are also said to be due to an abnormally high percentage of salts in the urine, produced by food and water rich in lime and to a specific tendency (lithiasis). Of more importance is the fact that retention and decomposition of urine are liable to cause an alkaline reaction and calculus deposit. When calculi begin to form the process is rather rapid. The symptoms of urethral calculi are rather constant, such as frequent attempts to urinate, straining and colicy symptoms. Another thing that should be remembered is that the history will reveal the fact that the horse is not passing any urine. If the owner does not know, a rectal examination will show that the bladder is distended.

Vesical calculi take longer to produce obstruction. The urine drips or may be voided in a small stream. Much depends on the size of the stone. If the stone is rough and partially free, there may be blood and shreds of mucous membrane passed with the dribbling stream.

Here is a case in a sixteen months old colt that had a very large calculus. The colt was a pure-bred draft animal. The first symptoms noted was a dribbling of urine and some soreness of the skin on the anterior surface of the hind legs. Examination revealed calculus that completely filled the bladder. This colt was found dead one morning following a thorough examination both from the rectum and by the irrigation of the bladder. I was not present at the autopsy but saw the bladder and the stone. The weight was four and a quarter pounds. It was shaped like the bladder. The walls of the organ were greatly thickened. So far as known no other animals have been so afflicted on this farm.

Hypertrophic Nephritis

Last July I was called to a dairy farm to see a pure bred Holstein cow, the autopsy of which was one of the most interesting I have ever held. During the year of 1920 while out to this farm on other business my attention was called to a pregnant animal that was passing some blood-tinted mucus from the vagina. At this time she was in about eight month of pregnancy. No examination was made but I gave the cow a douche and advised that the same be done daily. The cow went through parturition all right, but we do not know whether the off-spring lived or not. Last July I was called to see this cow because she was not feeding well. On examination I found a little disturbance in the pulse but no elevation of the temperature. The cow is again pregnant and due in about one month. I made a rectal examination to determine the position and the condition of the fetus. It was alive and no cause for the discharge was found. As she was very valuable and was not responding to stimulation, another veterinarian was called in consultation. The cow was free from tuberculosis, but continued to grow weaker without apparently suffering any pain of the usual discomfort of an animal suffering with some death dealing disease.

On being notified that the cow had died during the night arrangements were made to hold an autopsy which was done in the afternoon. The owner asked what I expected to find at the autopsy and I replied that there must be a pus sac somewhere in the abdominal cavity. We found chronic nephritis that could have been diagnosed antemortem.

There were no pathological conditions present anywhere except in the urinary tract. There was nephritis and some cystitis. The left kidney was elongated to 14 inches, several inches

thicker than normal. Sisson describes the left kidney as follows: The left kidney occupies a remarkable position, and when hardened in situ, differs strongly in form from the right one. When the rumen is full, it pushes the kidney backward and across the median line, so that it is situated on the right side and at a lower level than the right kidney. As to its normal size, it is 6 to 8 inches long and its width is 2½ to 3 inches and somewhat thicker posteriorly. In this subject the left kidney was about 14 inches long, ten inches thick and weighed pounds instead of ounces. Normally the weight is 20 to 25 ounces. The right kidney was even larger than the left. The lobules were filled with pus and urine. There was an immense collection of offensive material throughout them.

The normal ureters are small with a diameter of ⅓ to ¼ inches. The length is shorter than in the horse. Sisson gives the length of the ureters in the horse as about 28 inches. The walls are relatively thin. In this case, the walls were thickened to about one half inches and filled with pus, blood, and other inflammatory material. The bladder was thickened.

The cause was not determined. The supposition is there was a mechanical obstruction of the ureters. There was so much diseased tissues around the region that we could not find what caused it. The animal never showed active signs of uremia, or delirium as is shown in severe disturbance of the urinary apparatus. Another co-incidence is that the demise of this dam was the third in succession of the same line and ancestry. But all were from different causes.

Pseudo-Leukemia (Hodgkin's Disease)

By pseudo-leukemia, is understood a chronic affection in which the blood-forming organs show the same changes as in leukemia but the increase in the number of the white corpuscles in the blood is absent.

Occurrence: Cases have been observed, in this country, in horses, cattle, dogs, and cats. The disease occurs more frequently than leukemia for which it is frequently mistaken.

Cause: The absence in the increase of white corpuscles in the blood corpuscle constitutes the only important difference in the two diseases: otherwise the symptoms are almost identical.

Symptoms: In most cases a chronic swelling of the lymph glands appear symmetrically on both sides of the body. Enlargements which vary in size, dense, roundish and painless are found in the submaxillary space and in the vicinity of the pharynx on the neck along the jugular furrow, on the chest, in the axillary region and in both inguinal as well as where other surface lymph glands occur. The skin covering them is normal and easily raised. Because in some cases the glands enlarge enormously, it interferes with motion due to compression of nerve trunks. One might go on and describe what may take place when internal glands are involved to a large extent. Thus disturbing vital organs.

Diagnosis: In leukemia a diagnosis can only be sure by microscopic examination, and from the pale, whitish color of the blood. There is an intense anemia of the visible membranes. In pseudo-leukemia the blood count is nearly normal regarding the relations between the white and red cells. The course of the disease is shorter. From the standpoint of differential diagnosis leukemia, tuberculosis, glanders, and malignant growths of the lymph glands come into consideration.

Prognosis: So far as is known no cases recover. If similar cases recover it was no doubt due to mistaken diagnosis. About four or five years ago I examined a cow with an ailment of this kind and if I remember correctly my diagnosis was that of lymphadenitis. The disease too far advanced to attempt treatment. Not long since a veterinarian called to a case of this nature; made a correct diagnosis and he found that every lymph gland in the body was enlarged.

Hypertrophic Hepatitis

In November of 1920 we were called to attend a farm mare that had been sick several days. Inasmuch as she would eat the owner thought she was not very sick. On examination I found the pulse 60, full and strong, the heart beats giving an impact to the body. Temperature 104°. Respirations about 18. The visible membranes were quite yellow and the skin was tense. The back had a straightened line, ribs elevated, but no pleuretic line on the abdomen. The mouth was clamy and the breath fetid. Pressure and percussion over the last ribs caused pain. My diagnosis was hypertrophy of the liver, probably an abscess formation. The history of this mare was that she had been used to haul beets from the field and that she had been overloaded. From that date the animal had not shown the usual spirits. A postmortem examination was held and I found that I was wrong again. This time it was the liver which weighed seventy pounds. The right kidney was destroyed and a large abscess filled the renal capsule.

Purely Practical

Pituitin is par excellence the best agent to use in the treatment of nymphomania of cows.

The nose ring equipped with a good sash cord rope is to cattle practitioner what the twitch is to him in handling horses. Both of them are indispensable.

Cheesy collections in the eyes of chickens may be caused by nutritional disease as well as by ocular roup, according to Phillips of Purdue University.

Drenching is a more dangerous practice in cows than in horses. It should always be done slowly in both species, with the head held up at a comfortable angle, and with due caution against false deglutition.

Streptococcic infection of the seminal vesicles is found by Williams to be a common affection of bulls. Its significance, although problematical, is worthy of study.

Hardening (ossification) of the cartilages after roaring operations is due to infection, rough handling of the interior of the larnyx and exposure of areas of pericondrium.

Pigs should be castrated before weaning. The best time for castration is when the pig is from 6 to 8 weeks of age. Unfavorable results from castration is usually due to infection from dusty or muddy pens.

The best practitioners use the stomach tube a great deal in administering bulky doses to bovines and many of them prefer this method to drenching in horses.

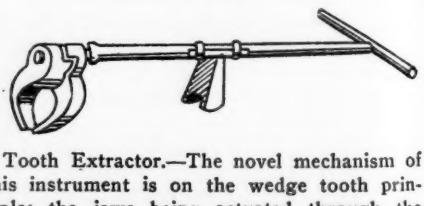
If you are a poor diagnostician, seek some other occupation. If you are a poor surgeon your colleagues will overlap your vested territory. If you can not maintain a reasonably inviting establishment why not try the junk business? If you do not read, study, think, it is no wonder, in view of the shifting situation, that you find practice declining. There is more money invested in domesticated animals today than ever before, there are not as many veterinarians as formerly, and there is more sickness among animals than when the population was less dense. Those who have taken these facts into account and have governed themselves accordingly are not complaining. Anyway railing, whining and complaining will never accomplish any thing.

TWO SIGNS OF APPROACHING DEATH

Two distinct signs of approaching death can be observed in horses and cattle; one of which is indicated in the masseter muscles, the other on the nostrils. The masseter muscles appear greatly atrophied, flattened and in the superior portion markedly depressed, so much so that the zygomatic crest protrudes more than ordinarily. The nasal openings are very much extended and on the nostrils the activity of the participating muscles may be observed through the skin. Although both of these manifestations may occur under other conditions, the first in association with prolonged debilitating diseases, the latter a symptom of severe inspiratory dyspnea, nevertheless if they appear after a very short duration of sickness they are always sure indications of approaching death.

"To pass the stomach tube in the cow attach the nose ring in the nose, throw the rope over a beam, and draw the head up to a comfortable angle, then adjust the mouth speculum and push the tube right down without ceremony."—Ferguson.

A NEW EXTRACTOR



Tooth Extractor.—The novel mechanism of this instrument is on the wedge tooth principle; the jaws being actuated through the pressure exerted on them by a screw on the end of a single rod. By this arrangement the operator has very little bulk of iron in the mouth (a very important factor in all dental operations), yet with a sufficient gripping power to extract teeth with deceased crowns, as the points of the jaws can be dug into the root of the stump by means of the movable fulcrum on the shaft, or, reversely, used as an aid in the extraction of the tooth.—Vet. Rec.

Cattle Practice

Edited by JOHN FRANCIS DE VINE, D. V. S.
Professor of Bovine Medicine, New York State Veterinary College at New York University, New York City.

The Fallopian Tubes

WHEN we realize that the calibre of the Fallopian tube is so small that it is with difficulty that the finest probe can be passed into it, we can see at once that it will not require much of an inflammatory process to occlude the tube temporarily and if at all severe that permanent stenosis is very likely to follow. But, again, my experience has been that inflammations that are severe enough to cause occlusion usually leave some evidence in their wake because I have repeatedly diagnosed enlarged tubes, and in some instances, probable atresia when the tubes were enlarged only in spots or portions, not more than twice their normal size. Still the history, with the enlarged tube gives one a reasonably safe ground to work on.

A Significant Autopsy

I recall having an experience with a valuable cow that had been barren for about a year and a half at the time I first examined her. I found her right tube slightly enlarged and the fimbriated extremity adherent to the ovary. The ovary was apparently normal and the cow was ovulating regularly, sometimes from the right ovary and sometimes from the left, repeated examinations revealing a corpus luteum in either ovary a short time after a period of estrum.

I diagnosed occlusion of the right tube with the probability that the animal might conceive sometime from the left ovary. She was, however, bred more or less regularly for about two years after and then slaughtered. On postmorten examination the right tube aside from being adherent to the ovary was closed just as solid as though there had never been a canal through it. The left tube and ovary were on section, apparently entirely normal. Nevertheless, this cow being eight years old and having had two calves, had evidently never conceived from the left ovary as the left horn was very small and the right indicated that pregnancy had always occurred on that side.

Hydrosalpinx

Hydrosalpinx is one of the manifestations of infection of the Fallopian tube and is said to be due to the closure of the ostium and so causing a collection more or less of clear serous fluid into the tube which causes the tube to stretch and its walls to become thin.

The present theory is that this fluid is serous from the beginning and in the human family it is said to be depended upon gonorrheal infection which seals both ends of the tube and allows the fluid to collect within the lumen differing only from salpingitis in that the inflammation does not progress to the stage of pus formation. In other words, representing a mild and quickly aborted gonorrheal infection. It is also supposed that a hydrosalpinx may be formed after the active pus-forming stage of the disease as a result of a late sealing of the tubes when the secretion has become serous. However, not infrequently in hydrosalpinx workers have been unable to even demonstrate bacteria in the fluid and in many specimens examined no evidence of inflammation was found in the tissue walls. Consequently, the present belief is that hydrosalpinx may be caused by a pelvic inflammatory process whose origin is outside of the tube, the closure of the ostium being the result of a perisalpingitis. It is said that in this way tuberculosis, puerperal infections, and appendicitis are doubtlessly accountable for a certain number of these cases in the human family.

Fluctuations Deceptive

We occasionally find in the bovine a condition that would lead us to believe that soft enlargements of the tubes are not always necessarily the results of any severe inflammatory condition because we may find a tube enlarged, soft and influctuating, perhaps as large as the end of one's small finger, and upon re-examination at a later date find that the condition has entirely disappeared, either

indicating that it was a hemorrhage in the tube that had become absorbed or an accumulation of serum that had become discharged without creating a disturbance. Therefore, the prognosis in the case of hydrosalpinx or an enlarged soft tube, should be guarded until at least several examinations have been made. It is said by some writers that hydrosalpinx is always bilateral. I have seen cases where this statement would not hold good. We not infrequently see perhaps part of the right horn, tube and ovary more or less of a distorted, twisted mass of hardened tissue due to an infection associated with retained placenta and not infrequently we may find the tube enlarged and bulging at one point so that it is very bladder like and still have the other ovary, tube and horn in apparently good condition.

Apparently Hopeless Case Reclaimed

Less than three months ago an extremely valuable Channel Island cow dropped a fine, strong, healthy calf. About three years ago this cow had been examined by two capable veterinarians, one of whom devotes all his time entirely to sterility work. She was considered by these able men probably hopelessly sterile. I examined the cow a short time after and found the exact condition as cited above with reference to the distorted horn and tube. The cow very shortly after conceived on the other side, carried a calf seven months, then aborted and held her placenta. She was given good attention by douching and bacterins. The uterus cleaned up quickly and in about a month it was found that every vestage of the distorted horn and tube had disappeared. The animal was bred some nine weeks later, conceived from the first service, and as stated has just dropped a normal living calf.

This is one of the most interesting cases I have ever examined. I have had several of my colleagues, interested in sterility work, examine this cow and compare her present condition with the notes recorded before conception by the other two veterinarians and myself.

Salpingitis

Salpingitis is an inflammation of the Fallopian tubes and is divided by pathologists into endosalpingitis and pyosalpingitis.

Endosalpingitis is a term used to express the earliest stages of the disease when the mucosa becomes swollen and reddened and the lumen is filled with an exudate, more or less purulent according to the severity or the duration of the infection. The condition may go on to a resolution or become more severe leading to pyosalpinx, when the inflammatory process extends into the muscular and subserous tissues. In this way a pus sac is formed which may grow to considerable proportion, the tube frequently attaching itself to some of the surrounding tissue, usually the broad ligament or ovary. It is said that pyosalpingitis may occasionally become healed spontaneously, but as a rule it results in permanent damage to the tube.

Clinical experience would lead us to believe in the bovine at least that it is not the Bang organism but the secondary invaders that are the cause of salpingitis. This in turn would indicate that conception had taken place and that death of the fetus with or without expulsion had occurred. However, this is evidently not in harmony with the pathology in the human subject; it being regarded in such cases as dependent almost solely upon gonococcus infection with or without conception following exposure by coitus with a resultant urethritis and cervicitis. In the cow it is manifest by barrenness and usually associated with a cystic degenerated corpus luteum, more or less enlargement of the tube and irregular estrum. If the ostium abdominale is not completely closed and the ovary still ovulating, the ovum is apt to perish in a virulently diseased tube.

Hasty Prognosis Not Advisable

In clinical work it is, therefore, constantly feared that a diseased tube, sufficiently so to be detected on palpation, is an indication that the ovum will either perish in the tube or atresia become so complete as to inhibit conception. But it is not good practice, unless the tube is pronouncedly diseased and hardened, to make an unqualified prognosis of hopeless sterility from the one examination. It is also well to keep in mind according to our present knowledge that salpingitis is frequently associated with chronic cervicitis and there is ever the danger that after having the cervicitis under control, an undiagnosed or later developed salpingitis may defeat one's efforts. However, it is a consolation to practitioners to know that such cases are the exception rather than the rule and the law of averages comes to our relief. Any attempt to treat pyosalpinx will do no good and may do positive harm by rupturing the tube and allowing its contents to escape into the peritoneal cavity.

(Continued on page 51)

The Problem of Sterility as it Confronts the Practitioner

Chas. W. Fisher, Danville, Ky.

UNTIL recent years sterility in cattle and mares was given very little attention by the general practitioner, but of late this problem has commanded the attention of everyone engaged in practice where the breeding of live stock is carried on. Breeders of pure bred stock are asking for advice and assistance in the handling and treatment of non-breeders. In former years a non-breeder, if a food animal, was fattened and slaughtered; while in the case of mares, they were disposed of for work purposes. The development and extension of the pure bred business, giving rise to the very great value of animals as breeders, as for example, dairy cows and race horses, which have little or no value other than for breeding purposes, has materially changed the procedure that breeders must pursue if they are to meet with success in their business. Naturally they look to the veterinary profession for assistance in this problem, and it therefore behooves every veterinarian to get all the information he can on the problem of sterility, that he may be able to treat sterile animals intelligently.

"Weed Out" the Incurables

The first problem is to be able to pick out the incurable cases at the earliest time possible, and eliminate them from further consideration. For the practitioner, the acquiring of information, and the practical, yes, successful application of his knowledge, must go hand in hand, because he will be judged by results, whether justly or unjustly. We must then, at the earliest possible time, separate sterile or barren animals into two general classes, curable and incurable. The latter cases in general, would consist of malformations, deformities, injuries and various pathological conditions, during the course of which changes have occurred in the affected parts that are beyond repair.

The first class, or those that give promise of correction, may be further subdivided into temporary and semi-chronic cases of sterility.

Inflammatory and other pathological conditions of the reproductive organs following abortion are possibly the cause of more cases of sterility than any other one condition. There are many systematic and organic diseases that will interfere with conception, but here we will consider only the reproductive organs: uterus, ovaries, fallopian tubes, cervix, vagina and vulva.

Metritis the Most Common Cause

In our experience eighty percent of the cases of sterility are due primarily to a metritis. However, this often causes the ovaries, fallopian tubes and cervix to become involved, and if so, these must be treated, especially if the condition is of a serious nature. However, often when the metritis is cured the other will right itself without treatment. We must then consider first of all the primary cause and the location of the pathological condition which causes sterility. We will first take up the treatment of metritis.

Here we must consider the different forms of metritis, in as much as each often requires an altogether different treatment from the other, for in many cases the treatment for one will aggravate the other, and full success depends upon being able to tell at an early time just which treatment is indicated.

Acute metritis is seldom met with in sterility work. However, it should be impressed upon our clients that no case of dystokia, abortion or retained placenta should be neglected, for acute inflammatory changes will subside if the proper treatment is applied at the time of these troubles, and many cases of sterility can be prevented in this way, for in this, as in all other diseases, prevention is more satisfactory than treatment. If breeders of stock would call their veterinarian to see all cases of parturition, whether normal or otherwise, a large percent of the sterility cases would never exist. If we agree that 80% of the sterility is due primarily to a metritis, and that at least 50% of chronic metritis cases are the result of some condition that occurred at the time of parturition, then we can say that almost 50% of sterility cases in animals (that have at some time in the past given birth to an offspring) are due to neglect. The reason for this is either that a competent veterinarian is not available, or that the owner of the animal does not call a veterinarian, or pos-

sibly, in many cases the veterinarian thinks such cases of so little consequence that he neglects them.

Therapeutic Suggestions

Acute metritis should be treated with irrigations of a mild astringent solution, such as zinc sulphate, potassium permanganate, etc. This is to prevent, as much as possible, the absorption of the toxic material and to mechanically remove any discharge or parts of decomposed material which might be present. Strong antiseptic solutions are never to be recommended, in as much as they are very irritating, lessen the resistance of the uterus to infection, and are not necessarily more destructive to microorganisms than a milder, less irritating solution.

Care should always be taken not to spread the infection by forcing the solutions into the uterus too hard, or by filling it too full. As much of the solution should be siphoned out as is possible, the remaining can be evacuated by gently massaging the uterus per rectum. This treatment should be repeated every twelve hours for several days, depending upon the severity of the case.

Echinacea has been used with good results, but we doubt if the cost would justify its use generally. Calcium sulphid and echinacea in tablets of thirty grains each, given per orum every four to six hours, is the best general treatment. Serum and vaccines may be used; in some cases they are apparently beneficial, while in others the results have been doubtful. Sodium cacodylate intravenous is very useful for cases showing general debility.

Chronic metritis is the form found most frequently in our sterility work. We will not attempt to take up separately the different forms of chronic metritis, and their respective treatments. It is important, however, to determine the character of the inflammatory process and outline our treatment accordingly.

In the use of irrigations it has been our experience that in acute metritis they do some good, but are seldom indicated in the chronic form; they have, on the other hand, often aggravated the conditions more than helped them. In the chronic catarrhal inflammation of the uterus where there is a muco-purulent discharge, the uterus enlarged, the walls thickened, the cervix closed or partly closed, we bail out the fluids with cotton or sponge, and paint the uterus and horns as far as possible with ichthyol or soluble iodine. This treatment should be repeated every twenty-four to forty-eight hours.

For the uterus which shows ulcers, abrasions, etc., we currett the parts and use above medical treatment.

In those cases where there is an excessive semi-fluid discharge, we use a uterine capsule inserted well into the uterus. This capsule contains sodii perborate, boracic acid and iodoform. The capsule may be repeated every three to four days, and kept up as long as is necessary. The above condition is much more prevalent in mares than in cows.

In cows we find cases where the cervix is closed and almost impossible to open. In these cases, we merely attempt to open it enough to allow the passage of a small catheter, and inject the uterus not too full of a solution of patassium permanganate, and allow this solution to be retained. Give no further treatment for two or three days, after which the cervix will generally be found dilated or in good shape to dilate. After this, several weeks should elapse before the animals are bred. We determine when the uterus is full enough by making a rectal examination.

Ovaries Not Often the Cause

The ovaries in sterile animals have received considerable attention in recent years by specialists in gynecology and are possibly the cause of some sterility. However, we feel that it is only a small percent of the cases that result from a condition of the ovaries, compared with those due to morbid changes of other genital organs. The ovaries, however, should be examined and if found to be cystic, should be treated by breaking down the cysts.

Lesions in the fallopian tubes are possibly quite often the cause of sterility. They are nearly always secondary, as they become occluded from the results of the inflammation which has spread from the uterus. Any form of salpingitis is very important, as there is no way to diagnose the condition clinically except by a process of elimination, and we have no treatment to suggest except that, in the case of valuable animals, it might be worth while to try a bacterin.

Reviewing the events of countless ages it seems that the wonderful operations of the greatest of biological laws—survival of the fittest—can not be set aside with impunity, even if such an achievement were possible.

Swine Practice

Edited by A. T. KINSLEY, M. S., D. V. S.

Necrotic Enteritis

NECROTIC enteritis is relatively prevalent in various sections of the country. The condition occurs in swine of all ages. It is common in pigs about weaning time, although extensive losses from scour, which is frequently a form of necrotic enteritis, is very prevalent in suckling pigs, at this time. This condition is relatively common in stock hogs in which it sometimes produces extensive losses. A recent investigation was made on a farm where 1,000 feeder hogs had been purchased and immunized before shipping, and in which there had been a loss of approximately 100 swine within 20 days. The cause of the loss in this case was found to be necrotic enteritis. This disease is of considerable economic significance not only because of the losses but also the extensive shrinkage of the affected swine. The specific cause of necrotic enteritis has not been determined. From the available information it would appear that various representatives of the colon typhoid group are the principal factors.

Susceptibility

The condition of the swine undoubtedly is a factor in the susceptibility; however, shotes in the best of condition become affected. Sanitary conditions in which the swine are maintained have an influence upon the susceptibility of swine to the infection. Intestinal parasites injure the intestinal mucosa and are therefore a factor in infection. Feeding is probably one of the most important influences in the causation of necrotic enteritis.

Symptoms

Because of the frequency of published articles on necrotic enteritis and discussions at association meetings of this disease it does not seem necessary to give a detailed description of the symptoms and lesions. In the usual form of the disease the first symptom evidenced is depression and dullness. At this stage there is usually a rise of temperature. The second group of symptoms consist of digestive disturbances such as diarrhoea and impaired appetite. As the disease progresses the affected animals appear unthrifty, have rough coats and arched back. The affected animals become emaciated, thin and weak and may die of exhaustion. In some cases the emaciation is so marked that the affected animal appears as though they were dried, hence the name "drying up disease." This latter has been designated as the chronic form of the disease.

This disease may affect a few swine only in a herd or it may involve the entire herd. The intensity of the symptoms manifested may not be proportional to the intensity and extent of the lesions. The course of the disease varies from a few days to several weeks.

Lesions

The outstanding lesion of necrotic enteritis consists of an inflammation of the intestinal mucosa. The inflammatory process varies in intensity and extent. The first evidence of the disease is usually in the lymphoid areas. In the beginning the affected mucosa is swollen and red, but as the disease progresses there is an accumulation of inflammatory exudate upon the affected mucosa and there is also more or less necrosis, particularly of the surface epithelium. The exudate and necrotic tissue adheres firmly to the underlying structure, this appearing similar if not identical to diphtheretic inflammation. The so-called button ulcer may occur in the cases that are prolonged. The lymph glands through which the lymph passes from the affected areas become tumefied and may be hemorrhagic. The inflammatory process may extend and involves the visceral peritoneum which will appear dull, show more or less adhesions and fibrous thickening.

Diagnosis

The diagnosis of this disease is not difficult when uncomplicated. The identification of the disease without autopsy findings is uncertain. The characteristic lesions, chronic inflammation of the visceral peritoneum and diphtheroi:l

inflammation of the intestinal mucosa are usually sufficient evidence for a diagnosis but should be supplemented by a definite history and symptoms. The simultaneous occurrence of other disease such as hog cholera and swine plague must be taken into consideration.

Control Measures

The losses sustained by the swine produced because of necrotic enteritis have been excessive. If the feeder or breeder will execute the regulations prescribed by the Veterinarian there is no occasion for excessive losses from this disease.

This disease involves the digestive organs and therefore the successful treatment must include a consideration of the diet. The affected animals should be given a small ration of a liquid or semi-liquid food. All solid foods and tankage should be withheld. Semi-solid buttermilk is probably one of the most valuable foods for swine affected with necrotic enteritis because it contains an excess of lactic acid and this acid has a tendency to diminish or prevent the activity of the bacteria of the colon typhoid group.

Proper sanitary surroundings should be provided and the swine should be maintained in comfortable quarters. A quarantine should be affected by isolating all diseased animals and they should be maintained for several days in separate lots.

It is possible to experimentally produce an immunity in swine that will protect them against artificial infection and it would, therefore, seem plausible to assume that an immunity may be produced that will protect against natural infection. Mixed Bacterin is the product used for the purpose of immunization in swine against necrotic enteritis. From field experiments it has been found that 2 or 3 injections of bacterin give the best results.

By the judicious use of bacterin, careful regulation of the diet, and the enforcement of sanitary regulations this disease is being successfully controlled in infected herds on infected premises.

Five hundred farmers recently attended a two days' vaccination school at the Iowa State College at Ames. The course was given by the Iowa Health Commission to disseminate knowledge regarding hog cholera prevention. Under a law county vaccination schools may be conducted in Iowa, and those qualifying receive certificates permitting them to do vaccinating.—Breeders Gazette.

GOITRE IN PIGS

We are having quite a little trouble this spring with malnutrition in pigs, among several litters. We have also found quite a number of hairless pigs, sometimes as many as five in a litter of twelve pigs. This last condition, I believe, we are overcoming by increasing the mineral content of their diet.

I have just post mortemed five pigs that died from a litter of thirteen. The pigs seem to have a pronounced swelling in the region of the larynx. On post mortem, the intestial tissue was quite hemorrhagic and pronounced oedema was present. The glands are very much enlarged and hemorrhagic. This condition is quite prevalent in pigs from nearly every litter where there were more than five. The owner states that the pigs were alive when they came, but seem to "choke up" and die immediately. All the pigs I have post mortemed show these same symptoms, and a number of owners have told me of this "lump in their throats" (as they call it). These pigs are in nearly every case from pure-bred sows. We have some wonderful stock in this community, the Duroc Jersey predominating.

I would like very much to have you give me a clue if you can, as to what this condition might be. It is causing a lot of trouble here, and is threatening the hog industry. Perhaps you can refer me to literature where I can find some information on this condition. --E. H. I., Idaho.

Reply: You have given rather a typical description of goitre. In certain sections of the country, including a large portion, if not all of Idaho, this condition is relatively prevalent every spring. The losses some years from this disease are large. It is frequently found to affect only a portion of a litter, or it affects the litter of one or more sows on given premises, the other being normal.

Goitre in pigs was described in Veterinary Medicine in the December issue. The following publications also give a complete description of this condition:

Bulletin No. 117 of the State College of Washington.

Bulletin No. 119 of the University of Montana.

Bulletin No. 297 of the Agricultural Exp. Station, Madison, Wis.

Thus far, it has not been possible to find any definite means of relieving the affected pigs. The condition is relatively easily prevented by administering potassium iodid in the feed dur-

ing the period of pregnancy. Some authorities recommend the administration of 10 grams over the entire period of gestation, dividing the iodin, giving an equal amount each day. Recently I have been informed that the administration of 2 or 3 grains in the feed twice weekly to sows during the period of gestation is sufficient to prevent the occurrence of goitre.

DIET CAUSES PIG LOSSES

I have a client whose little pigs are dying.

History

No cholera among other hogs on this farm. In fact, there has never been an outbreak of cholera or any other contagious swine disease on these premises for at least fourteen years. There is no cholera near this farm at present and all swine have been immunized for a period of three years.

He has ten sows in all, five young and five old ones. Young sows first litter, old sows third litter. The old sows all farrowed and pigs are doing nicely. Two young sows have farrowed, one farrowing eleven pigs and one seven pigs. Sixteen of these pigs are dead; we used the other two for postmortem examination, which were sick at the time. These young sows and the herd boar were given the simultaneous treatment against hog cholera on October 6, 1921, receiving 75 cc of serum and 2 cc of virus. They weighed approximately 125 pounds when immunized. The sows were injected in the axillary space and the boar behind the ear. They were bred on November 5, 1921.

None of the hogs have been off the premises and no new stock has been bought. The sows have been fed one pint of Armour's Meat Meal and about six ears of corn a day, and allowed the run of an eighteen-acre pasture, with running water. This same ration was fed up to farrowing time. Sanitation and housing on the farm are above the average in this community.

Symptoms

Pigs appear absolutely normal and healthy at farrowing time. Sows have plenty of milk. Pigs remain healthy until forty-eight hours old when they begin to become listless, hide in the straw and refuse to nurse; no rise of temperature, scours or external lesions of any kind. They live about twenty-four hours after showing signs of illness and die lying prone on the abdomen, legs tucked under. There is no goitre and the pigs are well haired and were farrowed at full period of pregnancy. Sows experience no trouble at time of farrowing.

Lesions

Post mortem was held on two sick pigs that had been sick twenty-four hours. Very small sharply defined petechia on kidneys. The mesenteric glands slightly tumefied and congested. Liver rather pale in color. Light petechia in stomach of one of the pigs.

Treatment Advised

Change ration of sows to one of oats and shorts slop for a week prior to and one week after farrowing. Exercise sows daily. Teaspoonful of mineral tonic twice a day and inject all pigs when twenty-four hours old with 10 cc of anti-hog cholera serum. Could this pig trouble be due to immunizing the young sows and boar four weeks before breeding? The owner thinks this is what has caused his trouble.

The other three young sows are to farrow in about one week and I would like an early reply so as to advise my client further as to any treatment that you might suggest. - **M. J. J., Ohio.**

Reply. You have given a comprehensive description of the condition in question.

The history, symptoms and lesions apparently eliminate all infective diseases. The petechial hemorrhages in the kidneys and the lesions of the mesenteric lymph glands suggest hog cholera, but this disease is eliminated first by the fact that these pigs evidence the first symptoms when two days old and the period of incubation of hog cholera is five days or more; and second, there is no febrile disturbance and hog cholera is manifested by a high temperature. The supposition that the simultaneous immunization of the sows and boar with anti-hog cholera serum and virus is not well founded because thousands of breeding swine are similarly immunized and losses of pigs, as you have described, are exceptional.

It is very probable that the condition you have described is of dietary origin.

Your recommendations of the change of diet to oats and shorts slop for a week prior and one week after farrowing, requiring exercise and the addition of some good mineral tonic are splendid and will probably overcome the difficulty.

Regarding the use of 10 cc of anti-hog cholera serum, will say that I would suggest that you use the serum on only one-half of each litter and thus determine whether or not it has any value.

RENAL LESION NOT PATHOGNOMIC

I am desirous of information relative to a condition that is prevailing in a herd of swine. There are 35 swine in the herd in question, consisting of eighteen 125 lb. shoats and the remainder are sows with pigs or are due to farrow soon and they are practically all affected. Some eight or ten have died. It is about six weeks since the disease first appeared in this herd.

The first symptom evidenced is soreness and the affected animals move with difficulty. Some few swine have had a very mild attack and have apparently recovered. The temperature is usually subnormal. There is constipation and the bowel discharge is quite black. One sow with pigs has been affected and there was complete agalactia in addition to the above symptoms. The affected swine become emaciated and their coat is rough and stary.

Two cases were autopsied. The stomach and intestines contained an accumulation of gas. Spleen and liver normal, kidneys contained one to five black spots or areas varying in size from a pea to a hazelnut beneath the capsule. When the capsules over these areas are incised a dark fluid escapes leaving a depression in kidney substance. Thoracic viscera apparently normal.

These swine are fed slop feed. One dose of mixed bacterin has been administered. Any information relative to diagnosis and treatment will be appreciated.—**C. H. S., Mo.**

Reply. From the description, it would appear that the condition in the swine in question is unusual. The fact that all of the swine in the herd are affected and they have no fever would be indicative of adietary disturbance rather than an infection.

The occurrence of gas in the stomach and intestine was probably derived from putrefaction of the content of these organs and may have occurred after death. The occurrence of the black areas beneath the kidney capsule is interesting and their significance is not understood.

It would probably be advisable to make a complete change of diet and would suggest that not more than a half ration be given for a period of time. Laxatives or purgatives are also indicated and if possible such medicaments should be given in the feed or slop. Comfortable quarters should be provided and the swine made comfortable. A further report on this herd will be appreciated.

PORCINE MANGE

One of my clients has about a dozen sows affected with a disease of the eye that is unusual, at least in this community. The skin around the eye becomes swollen and thickened and the eye-lids are so pendulous that the eye is completely closed. There is no inflammatory disturbance of the ocular mucosa or cornea. The pupil is dilated, excepting for the condition of the eye-lids these sows are in good condition.

Any information on the above cases I assure you will be appreciated.—H. L. L., Ohio.

Reply: Your inquiry concerning the diseased condition in swine received and the description is quite interesting. The diagnosis of the condition is, of course, problematic but the condition that you have described is suggestive of sarcoptic mange. The parasite producing sarcoptic mange in swine locate by preference where the skin is thin, such as the eye-lids, inside of the ears, axilla and inside of the thighs.

The usual symptoms manifested consist of violent rubbing and on close inspection papules will be observed in the pruritic areas. The skin of the affected areas is thickened and wrinkled and the bristles stand erect and later become loosened and shed. There is usually more or less supuration beneath the surface. The disease process spreads slowly.

A positive diagnosis depends upon the finding of the causative parasite by a microscopic examination of scrapings from the deeper layers of the affected skin.

Sarcoptic mange is difficult to overcome. Some practitioners report good results from the application of kerosene after the scurf and debris have been removed from the skin by the use of warm soap suds and brush. This treatment should be repeated every seven to ten days.

The cases you have reported are interesting. The diagnosis suggested may not be correct. We will appreciate a further report on the cases.

QUESTIONNAIRE BY DR. LAWSON

1. What is life?
2. What is blood?
3. What produces blood?
4. What causes pain?
5. What causes swelling?
6. What causes fever?
7. What will raise temperature?
8. What drug is harmless to the tissues?

Laboratory Diagnosis

Edited by C. A. ZELL, D. V. M.

DIRECTIONS FOR PACKING SPECIMENS FOR LABORATORY EXAMINATION

1. Gross anatomical lesions, where a bacteriological examination is desired, are best sent carefully wrapped in a cloth wet in a 2 to 10 per cent solution of farmalin, and properly boxed. For small specimens use the weaker solution. For large specimens, the stronger solution.
2. Chickens and other fowl should have the feathers removed, be wrapped in a cloth saturated with 10 per cent formalin solution and sent to the laboratory whole and unopened.
3. Specimens of tumors or other tissue, not for bacteriological examination, may be sent in a 4 per cent formalin solution.
4. Specimens of blood, pus and body fluids for bacteriological examination or for serum tests should be drawn aseptically and sent in sterile containers (small bottles boiled and cooled), airtight. Such specimens should reach the laboratory quickly. If sent by parcel post they should be sent special delivery. It is best to send blood, pus and body fluids by first class mail, special delivery. If the quantity of pus is small, dilute it with sterile normal salt solution to prevent drying. Sterile containers will be supplied on request.

Quantitative chemical analyses cannot be furnished free of charge owing to the large amount of work often involved, but tests for the presence of the more common poisons will be made without charge.

Where an immediate reply either by wire or letter is requested, a nominal charge will be made. In such cases, the inquirer will be billed direct by the laboratory.

In all cases where laboratory examination is requested the history and symptoms of the case as fully as they may be obtained, and a description of the post-mortem findings if an autopsy has been made must accompany the request, the object being not only to enable the laboratory technician to render the greatest service possible, but also to make the report of value to readers who have not seen the case.

Send all correspondence and specimens to Dr. C. A. Zell, Room 1611, Masonic Temple, Chicago, Ill.

FIBRO-MYXOMA OF THE LIVER OF A COW

The specimen I am sending you, under separate cover, is from the liver of a cow that died from an intestinal disorder. Please examine this specimen for tuberculosis.—A. J. Z., North Dakota.

Reply: The gross appearance closely resembled tuberculosis but the microscopic examination as well as cultivation experiments failed to show any signs of the tubercle bacillus. The liver lesion proved to be multiple fibro-myxomata.

INFECTED MILK

Under separate cover I am mailing you samples of milk and water from a herd of cows that have been troubled for about two months. There are periods of five to eight days in which the milk is normal and then it will become ropy and sour in a very few hours. The milk is sometimes flaky. We have tried everything in regard to sterilization of the utensils and I have made recommendations about clean milking, which I believe are being carried out, but thus far without any results. There seems to be no lesions of the udder.—O. S. T., Pa.

Reply: The bacteriological examination of the milk specimen showed many streptococci and biplococci, which are undoubtedly responsible for the trouble you are having. It would be advisable for you to scrutinize very carefully the supposed sterilization the vessels are given, and also look into the cleanliness of those who milk these animals, the cleanliness of the animals themselves while they are being milked, and also that of the stable. With these precautions in operation you might then expect a benefit from the administration of a mixed bacterin.

BLACK LEG, ORGANISM NOT FOUND

I am sending specimens taken from the frozen carcass of one out of a number of young cattle that have died from a disease that seems to be black leg, but which has not been conformed in any of several laboratory investigations I have had made. The cases seen so typical that I am sending this specimen to you in hopes that my clinical diagnosis may be confirmed. More than fifty head have died on this ranch during this year.—**A. N. R. Sask.**

Reply: We were unable to find any pathogenic organisms in the specimens, which means that there were none in the particular muscular tissue examined. Under such circumstances vaccination should not, however, be delayed. The symptoms and the age of the animals incriminate black leg as the disease at hand and action should be taken promptly to stamp it out even though the several laboratory examinations have been negative.

SUSPECTS FORAGE POISONING

I am sending you samples of feeds under separate cover, mistrusting that it has been the cause of the death of seven horses and the illness of others which seem to be going the same way. Please give this feed a careful examination and report to me as soon as possible.—P. L. Iowa.

Reply: Careful examination of the feed did not reveal anything that would indicate that the feed is to blame for the death of these horses, and we suggest that you send specimens of the organs should you hold any postmortem examinations on any of these animals that may die in the future.

CHICKEN CHOLERA

A client of mine has lost 75 out of a flock of 350 chickens in the last two months. They get lame, do not eat nor drink much, act droopy, and some have diarrhea, and others do not. They emaciate and finally die.—E. R. L., Illinois.

Reply: The examination of these specimens revealed many bipolar organisms, which would indicate that you are undoubtedly dealing with avian hemorrhagic septicemia in an unusually chronic form.

The flock will be best handled by a good cleaning-up, immediate destruction of the sick, and the administration of a bacterin.

HEMORRHAGIC SEPTICEMIA

I am sending you the blood of a cow that died very suddenly. While sick she acted very nervous, ran blindly into objects, frothed at the mouth, fell to the ground, and then struck out with all four feet and bellowed with pain. The postmortem examination revealed practically nothing wrong with any of the organs, except some petechae on the heart and bladder.

Two weeks ago the same owner lost two calves within twenty minutes of each other, with exactly the same sickness.—C. J. H., Ia.

Reply: Bacterilogical examinations of the blood sample showed many typical bipolar organisms of hemorrhagic septicemia.

PROBABLY ASCARIDOSIS

I am sending you a portion of intestines, liver, and lung, of a pig that was brought to my office for diagnosis. All of the pigs of this herd are said to eat well but do not thrive. They have considerable cough especially when driven about. They have been treated with worm capsules without benefit.

The postmortem examination showed enlarged liver, spleen, and kidneys with some caseated foci in the lungs and small inflamed areas in the intestines. Please make a laboratory examination and send me your reply.—A. D. P., Ohio.

Reply: Bacteriological examination did not show any tubercle bacilli but many streptococci and staphylococci in the lung lesions. This herd should be examined more carefully for ascarids, an article on which appears in this issue under the caption of "Round Worms in Pigs."

THE SO-CALLED SPONTANEOUS RABIES IN DOGS

Dumb rabies were diagnosed in a bitch in the medical clinic of Tourin. This animal gave birth 14 days previously to a litter of puppies. Six days following the examination the animal died and the microscopic examination revealed Negri bodies. The test inoculations were likewise positive. Of the 7 puppies the owner donated 4 to the clinic for observation. One of these died in 67 days following birth with characteristic dumb rabies (test inoculations on rabbits positive, Negri bodies demonstrated), and two months later another became affected with symptoms of rabies where as the two remaining ones remained alive and in the best of health. This case tends to support the observations of other authors that the hereditary transmission of rabies is possible.

VAGINAL GRANULOMA

I would like to know if any reader of the Journal ever saw a case of imperforate vagina in the mare. A three-year-old mare I was called to see recently had what the owner thought was a case of eversion of the uterus. I found a mass hanging from the vulva about the size of a half-gallon measure and on examination found it was not the uterus, but a growth containing fluid which I think was menstrual discharge—about one quart. The mass was thick with several large blood vessels running through it. I removed it surgically, dressed the wound and left some medicine for the owner to use. In four days the mare was found to be nearly healed and three days later she was put to work.—J. A. S.,

From one eighth grains to one quarter grains of arecoline will expel tape worms in the dog in about twenty-four hours, if given per os on a full stomach.—Reid Blair.

Abstracts of Foreign Literature

Edited by A. EICHHORN, D. V. S.

DISEASES OF COLTS[6]

Pyo-septicemia of colts is not a uniform affection sui generis; various organisms may produce the same clinical manifestations and on the other hand, the same organism may be responsible for a variance in the clinical picture. The dogmatic naval infection should not be considered as the sole point of entry. The greatest number of diseases of colts are caused by the organisms belonging to the coli-areogenes group, by the group of pyogenic organisms such as diplococci and streptococci, by the bacteriumviscosum equi and by the paratyphosus bacillus. The author describes these various bacteria illustrating the changes induced by them. Of other bacillary infections in colts he mentions tetanus, paratyphus, colon prodigiosus and a streptothrix. Aside from these he found a pneumonia caused by parasites and in 16 cases localized inflammation of the naval (a primary bacterial naval infection in the lumen of the naval vessels).

For the treatment the administration of maternal blood is recommended which, according to the author, gave splendid results in a great number of cases. It failed in infections with the bacillus viscosum equi, in peracute coli infections and in peritonitis, as well as in cases of already existing organic changes. He also considers of great importance the use of specific vaccines. In case the causative agent is unknown he obtained good results from the administration of streptococcus and colon serum, simultaneously with the maternal blood. For prophylactic purposes in all kinds of infections he recommends repeated immunizations with bacterial preparations (vaccines, extracts, toxins).

SWINE ERYSIPELAS INFECTIONS IN MAN[10]

In recent years Stengel had an opportunity to treat repeatedly man affected with erysiplas infections. In one instance four out of six persons engaged in the dressing of a hog which proved on postmortem infected with swine erysipelas, became infected. In most cases the dorsal side of the finger is affected. The bluish violet discoloration of the affected portions of the skin is typical. Following the injection of swine erysipelas serum (1 cc to 10 kg. body weight) the inflammatory manifestations have rapidly subsided. In one case where the dose of the serum was insufficient a progression of the disease developed.

THE INTRAVENOUS TREATMENT OF NERVOUS DISEASES WITH PREGL'S SOLUTION[11]

Professor Pregl in Graz prepared a solution which contained the iodine free and partly in cleavage and which may be administered in large doses intravenously. It circulates in the body without causing any ill effects and exerts a disinfecting action upon disease processes by releasing the free iodine. Detailed information on the composition and the chemo-physical properties of the preparations are not published. In the Psychiatric of Halle the solution was employed on 40 patients in doses up to 100 cc injected intravenously. The results obtained especially in paralytic patients are very encouraging for further experiments with Pregl's iodine solution. It has been also observed that in all cases treated with this preparation iodine could be demonstrated in the urine.

PRESENCE OF HEMOGLOBINOPHILIC RODS IN CANINE DISTEMPER[9]

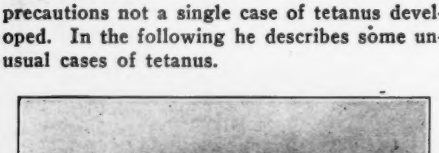
Olsen isolated from five cases of distemper pneumonia a bacillus which, in its cultural and serological characteristics, was identical with Pfeiffer's influenza bacillus. The intraperitoneal innoculation of this bacillus into dogs produced a fatal peritonitis. Peritoneal injection of the exudate resulted in severe general disturbances and a general hemorrhagic fibrinous peritonitis. The virulence of the bacillus was increased by further passages. The peritoneal exudate of a dog used for passage of the bacillus, produced in another dog on intratrachial injection a fatal pneumonia. The pneumonia foci contained influenza bacilli in great masses. While the author is not inclined in considering his findings conclusive, he nevertheless deems it advisable to point out the possibilities of a relationship between canine distemper and influenza of man.

A SIMPLIFICATION OF THE CUTANEOUS TUBERCULIN TEST[7]

For the purpose of avoiding Von Pirquet's scarifier and the disadvantages from the use of Moro's tuberculin ointment, Brandes recommends for the cutaneous tuberculin testing the following procedure: Over a space of the size of a quarter, Fuller's earth is rubbed on the skin with the fingers whereby the most superficial epithelial layer is removed and which opens the fluid spaces without bleeding. Following this a small amount of old tuberculin is applied to this part and is also rubbed in with the finger. In from 20 to 48 hours, sometimes even in from 9 to 12 hours, the reaction appears. This method of tuberculin testing is simple, painless and without danger. In effectiveness is compares very well with the other cutaneous tests. It deserves the widest application, especially in child practice.

CASE REPORTS OF TETANUS[8]

The author, practicing in a locality where tetanus developed very commonly from wound infections due to the heavy impregnation of the soil with tetanus spores, has since the war made it a general practice to administer tetanus antitoxin in all cases where the possibility of such an infection exists. With these precautions not a single case of tetanus developed. In the following he describes some unusual cases of tetanus.



Tetanus in a Dog

A German hound was operated under morphine anesthesia for the removal of a tumor on the head. Six days later the stitches were removed. The healing of the wound did not progress very satisfactorily on account of the scratching of the animal by which he tore out several stitches. The dog was kept in a shed in the garden, rolling and playing around in the sandy soil. Fourteen days following the operation, tetanus developed in the animal with pronounced trismus, unable to take any food, prolapse of the membrane nictitans, general condition undisturbed. Locally tincture of iodine was used; 4,000 units of antitoxin were administered at four different times. Marked improvement was observed. Six days later a relapse occurred following which additional tetanus antitoxin was administered repeatedly. The animal made a complete recovery.

Tetanus in a Goat

The examination revealed trismus of a moderate degree. The animal did not eat. Slight lameness was noted in this animal three days prior to the examination. Diagnosis, tetanus partialis. Treatment consisted of the administration of 2,000 units of tetanus antitoxin. Three weeks later the animal was considered recovered.

The infection in the dog has without a doubt taken place through the operation wound; in the cow from the uterus; whereas in the goats it is possible that the infection also took place from the uterus, although the possibility of injuries cannot be excluded.

Tetanus in a Cow Following Retention of the Afterbirth

This animal developed tetanus 14 days following normal calfing. The afterbirth was retained, two fingers could be passed through the os uteri. Purulent metritis, temperature 104, pronounced trismus, two days later tetanic spasms of the extremities. At the request of the owner an attempt at treatment was undertaken by irrigation of the uterus with Ichthargan solution. Eight thousand units of tetanus antitoxin was administered and injections of antitoxin were repeated. As there was no indication of improvement, and in fact as the spasms became more pronounced, the animal was slaughtered. The bacteriological meat inspection declared the meat fit for consumption.

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6. Dr. F. Luetje (Deut. Tier. Woch., No. 37, 1921).
7. Belcour M. Gladbach (Ber. Tier. Woch.).
8. Dr. Grawert, (Ber. Tier Woch.).
9. Dr. Olsen (Sent Med. Woch., Vol. 47, No. 31).
10. Dr. Stengel (Med. Klinik., Vol. 17, No. 33).
11. Dr. Ponitz (Munc. Med. Woch.).
12. Prof. Kraus, Drs. Bois and Oyarzabal (Munch. Med. Woch., Vol. 68).

Parasitology

Edited by MAURICE C. HALL, Ph.D., D. V. M.

Fig. 1. Small Pig Stunted by Ascaris Infestation

Round Worms in Pigs*

H. B. Raffensperger

Bureau of Animal Industry, Zoological Division

MR. CHAIRMAN, I want to make a statement with reference to posterior paralysis of pigs of which Dr. Connaway spoke before I speak on the subject assigned to me by the program committee.

I hesitate to say that kidney worms would cause the paralysis which we see in pigs. About three years ago I examined sixty pigs that were shipped to Chicago from Arkansas. The pigs were thin but very active; no symptoms of paralysis. Every one of the sixty showed on post-mortem examination large numbers of kidney worms. In many of the paralysis that we see in pigs in the North there are no kidney worms, as we seldom, if ever, find kidney worms in our Northern hogs. I would not be surprised if there are as many cases of paralysis in pigs in the North as in the South.

The subject assigned to me is "Round Worms in Pigs." I will confine my remarks mostly to some facts obtained in field experiments.

Stewart's Conception of Invasion Not Entirely Correct

Major Stewart, of the Indian Medical Service, was the first one to discover that when embryonated ascarid eggs are fed to rats and mice they are able to produce a pneumonia, due to the larvae migrating to the lungs. These larvae are coughed up and pass out with the feces. He made his deductions that probably rats and mice by soiling food were the means by which children and pigs become infected. Recent investigations show that these deductions are not correct.

You will wonder why we speak of Ascaris lumbricoides in children in connection with round worms in pigs. This is because Ascaris lumbricoides in children is in all respects exactly the same as the parasite in hogs.

The question will come up, "How do children become infected?" Children can become infected not only by exposure to soil polluted by human beings infested with ascaris but also undoubtedly, in some cases, at least, by playing around hog lots or in orchards where wormy pigs have been kept. Ransom and Foster, of the Zoological Division of the Bureau of Animal Industry, did much work on the mode of infection of ascarids and they have shown contrary to Stewart's conclusions that an intermediate host is not necessary. The animals they used were rats, mice, guinea pigs, rabbits, pigs, goats and sheep. In most of the work they did they used the eggs of worms obtained from pigs.

Sheep an Unusual Host for Ascaris Lumbricoides

One thing they observed, and I have observed the same thing several times since, and I want to especially make this point before I go any further: One can produce an infection

*Address made at the meeting of the Missouri Valley Veterinary Association, February 1, 1922.

in the lungs of sheep by feeding embryonated ascarid eggs, and the larvae when coughed up and swallowed, will develop into a rather large size ascarid in the intestines. Ransom and Foster in their work were not able to develop females in the intestines of sheep that would produce fertile eggs, neither was I in the experiment I conducted, notwithstanding the fact that in one case a lamb was kept 111 days after infection. I have gone to the packing houses in Chicago and examined a large number of sheep's intestines until I found arcarids, and of those I found none of the females contained fertile eggs. I took the eggs from the uterus and cultured them but obtained no cleavage. I bring this point out to call your attention to the fact that it appears there is no Ascaris ovis species that should be recognized. If there was a distinct species of Ascaris in the sheep, it should produce fertile eggs. The sheep is evidently an unusual host for Ascaris.

Eggs Develop at Temperature Lower than Animal Body

By request of the Chief of the Zoological Division, I conducted three years ago a series

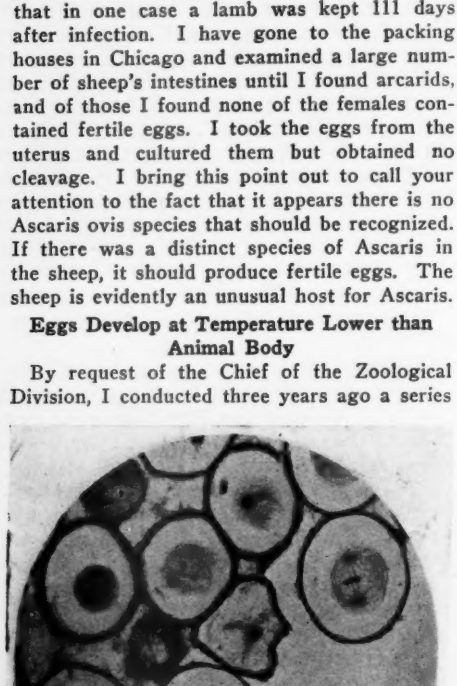

Fig. 2. Early Cleavage

of experiments on pigs of different ages. I took pigs that were two weeks old, pigs that were four, six, eight, ten, sixteen and even twenty weeks old, and fed them with the embryonated eggs. I might bring out the point here before speaking of the experiments that you cannot infect a pig with the fresh ascaris eggs. They must be developed outside the animal body at a temperature that is lower than the animal body. If you take the ascarid eggs and put them in the incubator at thirty-seven and one-half Centigrade, which is the temperature of the human body, they may develop as far as the sixteen cell stage; then cleavage stops and the eggs will not develop any further. If you incubate Ascaris eggs a the temperature of the hog (39° C.) you get no cell division. They simply remain in the resting stage. So you can see that you could feed a pig half a bushel of fresh eggs and you would not be able to infect the pig. They must be incubated at a lower temperature than that of the human being or hog if you would develop them. They develop well at temperatures between sixty and ninety degrees Fahrenheit. When you get above ninety-five degrees Fahrenheit they are inhibited in their development, but below ninety and over sixty degrees Fahrenheit they will go ahead and develop in the presence of moisture and oxygen until there is an active embryo inside the eggshell. The eggs are then infective.

You can readily see that the manure pile, mud hole and general environment of the dirty hog lot are likely to be good places for the development of eggs, because they often provide the proper combination of conditions for development; oxygen, moisture, and at certain seasons of the year a suitable temperature. The dirty hog lot is a splendid medium place for the development of ascaris eggs.

Observation on the Acute Stage

With reference to the experiments which I have mentioned, I observed a number of things in infecting pigs at various ages. I observed, as noted by Ransom and Foster, that susceptibility to infection greatly decreases as pigs become older. I observed that the first symptoms of lung invasion by the larvæ were those of rapid breathing. This is usually observed the fourth or fifth day after feeding embryonated eggs. The seventh or eighth day there would appear the spasmodic or jerky breathing, a case of typical thumps. I am describing now the acute stages. You ofttimes get a secondary infection. When you get a secondary infection following the irritation caused by the larvæ in the lungs, you may find well distributed small abscesses throughout both lungs. When you do not get that condition, you find several large abscesses that will break down; you may get what we term gangrenous or necrotic pneumonia, and the extent of the lesion will determine how long that pig will live. One thing we do know; that when secondary infections occur in the lung of the pig, that pig

will never do well. That is the pig that will be thin, rough-haired and unthrifty, (Fig. 4). The pig that has passed through an acute stage of heavy ascaris larval infection of the lungs will never do as well as the pig which has never passed through such an infection.

Lung Stage of Ascarids Must Not Be Confused with Common Lung Worms

After the larvæ by the way of the blood stream pass into the lungs, they migrate into the bronchioles and from the bronchioles into the bronchi and into the trachea; then they are coughed up with the mucus, are swallowed and pass into the intestinal tract where they settle down and develop into fully grown ascarids. I don't want you to misunderstand me. I am not speaking of the lung worms of pigs. I am speaking of the intestinal round worms of pigs that have a lung stage, and this stage often causes serious damage to the young pig.

Now we will grant that there may be a considerable infestation in the intestinal tract without fuch apparent harm. With ten, twelve or fifteen ascarids in the intestines the pig may do first-rate if there has not been too much damage done by them in passing through the lungs. It is by the lung stage that the great harm is often done. During the attack of so-called thumps the pig gets a set-back. When secondary infection occurs it is likely to be serious and the pig will not do well afterwards.

Confirmed by Field Observations

As I said before, I conducted experiments with pigs of various ages; not only did I do that, but I went into the field in different sections of the State of Illinois and other States, but more particularly the State of Illinois. I examined pigs in different herds that appeared to be good clinical cases and posted them, and I was able to find the larvæ and note conditions which I have just described.

Not only did I observe the clinical symptoms of ascarids in pigs in dirty and insanitary hog lots, but commonly observed other diseases such as bull nose or infectious rhinitis and so-called necrotic enteritis. In the post-mortems of the so-called necrotic enteritis cases the mucous membranes of the intestines would vary in color from a dark brown to a black. Not only were these lesions in the caecum and in the large intestines, but sometimes in the small intestines and the stomach as well. We find that these conditions are likely to go together.

Ascarids Filth-Borne

Some years ago I spoke of these conditions as filth-borne diseases. I am very happy to state today that in speaking to Dr. Dorset about a week ago at Washington he agreed with me and said he looked upon these conditions as filth-borne diseases. I think that is a very good term for these particular conditions.

When we went into the field to conduct a series of experiments to overcome these conditions, what did we expect to accomplish? It was somewhat indefinite. However, our observations in the field indicated that pigs from two to eight weeks old, and even older, were the ones in which the losses were heaviest from these filth-borne diseases. We also felt if we could protect the pig from the infection until it was four or five months of age, we would accomplish much in saving the young pigs.

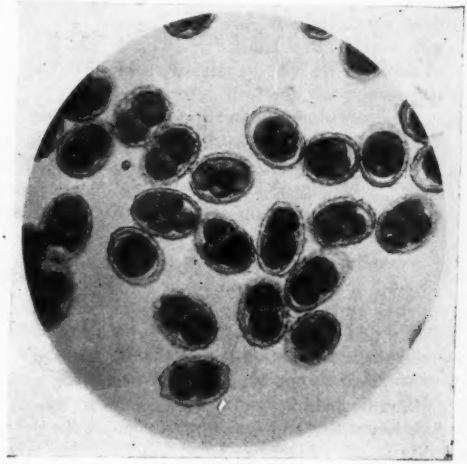

Fig. 3. Cell Division

The Clean-Up Also Helped Other Conditions

We started out with a clean-up compaign. When we first began this campaign a few years ago, it was said that we were trying to adopt parlor methods for raising pigs, but there was nothing like that in the stand we have taken. Everything has been done for a purpose, and we would never have thought of taking the steps we took if we had not known the life cycle of ascarids. Knowing the life cycle, and knowing what was necessary to prevent the infection, the steps taken came along in natural sequence. When we got rid of the ascarids, we got rid of these other conditions.

Why do we wash the sow? We wash her because she is dirty. She has been kept around the hog lot; she has lain in the manure and mud. Why should you not wash her? Our slogan was, "The first mouthful a little pig takes should be a clean mouthful." If the sow is in the clover patch in the Fall of the year we wouldn't think of washing her; let her farrow out there and keep her away from the permanent, dirty hog lot.

Ascarid's Eggs Resist Ordinary Disinfectants

Another thing: Why did we scald the farrowing pens with hot water and lye? We didn't know what else to do to destroy the ascaris eggs, as they will develop in a ten per cent solution of dichromate of potassium, in a one to one thousand bichloride of mercury solution, and we can develop them in seventy per cent alcohol; the medium in which we incubate them for experimental use is a two per cent formaldehyde solution. What else can you do? They have fairly thick shells and antiseptics do not penetrate readily. That is the reason we use hot water.

We have done some work with reference to the phenols. If you suspend the eggs in a three per cent solution of cresylic acid for five hours you can kill them; or a five per cent carbolic acid solution for ten hours will effect their destruction.

Sometimes people squirt a little disinfectant around and give the farrowing pen a smell of phenol and think they have done something. They probably have done something to other microorganisms, but not to the ascarid eggs.

Permanent Hog Lot The Menace

The first thing we try to do is clean up. We use hot water and lye simply to clean the pens; that is all. After we have done that we wash the sow and put her in the clean farrowing pen. After the pigs have been farrowed they are kept in the pens until eight or ten days old; then we take them out to a clean pasture and never let them get back to the dirty hog lot until the pigs are four or five months old. We usually haul them to the clean pasture.

You will say: "How about shade and water?" Yes, you must have shade and water. If water isn't piped in, haul it in. With reference to shade: If you don't have shade, make a temporary one. We have been using in our work temporary shades which you can build in half a day; one that will be sufficient to protect one hundred pigs. It isn't so much trouble. The one shown this year at the International Stock Show by the Bureau of Animal Industry is a very satisfactory one.

Wallows Not Necessary

With reference to hog wallows, you don't need them. You can get along without them. It is all right to use them if they are clean

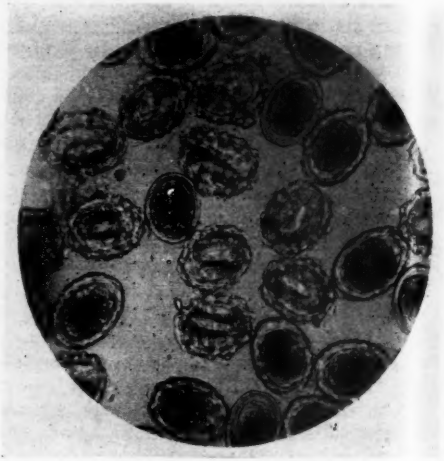

Fig. 4. Embryos in Infective Stage

wallows. Let them wallow, but many of our sanitary wallows the pigs don't seem to want to use. I think they would be all right if you could make the pigs use them. They don't seem to want to go into the sanitary wallow. You can get along without a wallow. A further feature of our plan is this: After the pigs have been farrowed and you have moved them to clean pasture, never let them get back to the old dirty, permanent hog lot. Forget there ever was such a thing as the dirty, filthy hog lot. After the pigs are five months old the danger from ascarid infection is not so great; and if you have to take them to the feed lot, you are going to get by a good deal better with reference to ascarids than you would otherwise.

Gives Better Results from Vaccination

With regards to our experimental work in McLean County, Illinois, it has not been one hundred per cent efficient because all who are cooperating have not carried out the plans in sufficient detail, but those that have followed the system carefully have obtained good results. We vaccinate or immunize against cholera and get excellent results. We don't have so many so-called cholera brakes other than real cholera breaks. When you have raised your pigs properly and immunize, you are going to get better results.

(Continued on page 52)

Zootechnics

Edited by E. MERILLAT, M. D. V.

The shipments of spring lambs from California in 1922 will only be about 80% of the normal.

The outlook for irrigation water in the Rocky mountain region is very favorable because of the large amount of snow in the mountains.

Semi-solid buttermilk when added to the ration of brood sows, according to swine breeders, stimulates milk production and largely prevents the development of scours and other digestive troubles of suckling pigs.

The presence of vitamines A and B in cows' milk is entirely dependent upon their occurrence in the ration, according to the findings of Kennedy and Dutcher. This indicates that milk vitamines are not synthetic substances.

The Department of Agriculture has completed arrangements for ascertaining the number of swine in the principal swine producing states. This information will be of considerable value and will probably be available by the first of June.

The animal species found in a given area constitute a fauna; the plant species found in a given area constitute a flora; the combined animal and plant species found in a given area may be termed a biota.—(Science.)

If diseases of all kinds were nearly eliminated the lost immunity now extant would probably leave future generations exposed to outbreaks like the ancient scourges that threatened to depopulate the earth.

A proposed bill in the Kentucky Legislature forbidding the teaching in the State University, Normal schools and public schools of "Darwinism," or the evolution as it pertains to the origin of man, was defeated by one vote in the house of representatives.

The total output of coal in 1921 was approximately one billion one hundred million metric tons. The United States produced 40.9% of the total. The production in 1922 in the United States may be materially diminished because of the miner's strike.

Inbreeding judiously executed is of very great value in the fixing of type. This form of breeding is a powerful tool but a dangerous one for the unskilled to attempt.

It is an old belief that sex can be regulated in cows by mating at the first possible opportunity after bearing a calf. The issue will be the same sex as the last one, it is claimed.

The goat industry is of considerable importance in some sections of the United States. A twelve stall modern hospital is being constructed at the Experiment Station, Sonora, Tex. This hospital is especially designed for the investigation of diseases of sheep and goats.

INTEREST IN PUREBRED SIRES DOUBLED DURING PAST YEAR

Judging from records of the United States Department of Agriculture, which conducts the "Better Sires—Better Stock" campaign, interest in purebred sires is more than double that of a year ago. During January and February the Bureau of Animal Industry issued 512 emblems or recognition to persons who signed declarations stating that they would use purebred sires exclusively in all classes of live stock kept. The number of persons granted emblems during the same time last year was 239.

Continuation of interest is shown by the unusually large number of enrollments early in March, more than 150 having occurred the first week. Henceforth all these owners will breed their cows, mares, sows, ewes, and hens to purebred sires only and will use breeding methods leading to further live-stock improvement.

"There is increasing evidence," declared Dr. J. R. Mohler, Chief of the Bureau of Animal Industry, "that raising scrub live stock is an unnecessary waste of time and feed. Any

live-stock owner can improve the quality of his herds and flocks by the better-sires route. Purebred sires permit the raising of grades, crossbreds, or purebreds—whichever is preferred—depending on the kind of females used."

According to reports from more than 500 live-stock owners who have used purebred sires for several years, the greater returns derived greatly exceed the initial outlay and the benefits accumulate with each generation of animals raised. —Clip Sheet 195, U. S. Dept. Agr.

JACKS TEN PER CENT BELOW STALLIONS

In regard to the procreative qualities of jacks, I will say that when we used to sell stallions and jacks, our guarantee read something similar to this: If an animal was sold in the spring of the year, we would, in the case of a stallion, guarantee him to be a sixty per cent foal getter, and with jacks, fifty per cent providing they were bred to good healthy mares, and they themselves properly taken care of, complaint to be made on them twelve months from date of sale, when the buyer could choose another animal of equal value or his money would be refunded. If the complaint was made one day after expiration of the guarantee, the buyer was out of luck.

In my opinion, it will depend entirely on what kind of a guarantee the buyer has and how it is worded.—**J. W. Oltmanns.**

FEEDS FOR FARM HORSES

Corn is a good grain feed for horses and mules doing farm work.

Ear corn and alfalfa hay alone are sufficient to maintain farm horses and mules doing a considerable amount of medium to hard work.

Farm grown feeds need no special preparation to be successfully fed to either horses and mules.

Legume hays should be fed with ear corn or preferably with ear corn and oats at the rate of one pound of grain and one pound of the roughage per hundred pounds of live body weight, increasing the roughage and decreasing the grain or vice versa according to the character of the work. (Ext. Bull. 238, Univ. of Ill.)

Approximately 90,000,000 gallons of sirup were produced in the United States in 1921.

WHAT IS FRESH AIR?

Most people no doubt would say that fresh air is air that is not stale or polluted with impurities of any kind. Others might insist that fresh air means outdoor air, where the conditions are such that it has not been contaminated by industrial smoke, dust or gases. In short, the popular notion seems to be that, when we say fresh air, we mean good air; that is, safe, breathable air; and this conception of the meaning of the term is not far from wrong.

It has remained for Prof. C. E. A. Winslow to give a clean cut definition of what is meant by the term, "fresh air." He tells us that "Fresh air has four qualities. Fresh air, first, is cool air. Air that is above 69 degrees F. is always harmful, except for very old people. Whenever the indoor temperature rises above this point, the circulation is upset, one tends to become dull, languid and inefficient, and the delicate membranes of the nose and throat are injured.

"Secondly, fresh air is moving air. Still air blankets the body and produces a deadening, numbing effect. Air in general motion stimulates the skin.

"Thirdly, fresh air is moderately moist air. Either very dry or very humid air is harmful.

"Lastly, fresh air is variable air. Slight changes in temperature and humidity are stimulating and wholesome for the body."

—Bull Health Dept., Chicago.

According to the annual report of The Indiana Stallion Registration Board there were 5,602 stallions registered in 1914 of which 2,666 or 52.6% were pure-bred and in 1921 there were 1914 stallions registered of which 1,442 or 75.3% were pure-bred. Although this is a splendid showing on the increase of the percentage of pure-bred stallions the marked reduction in the total number of stallions is an index in decreased horse breeding. The present relative price for good horses compared with other farm commodities no doubt will be a stimulus for an increase in horse breeding.

"Horse flesh was served in the guise of fillet of beef at the annual banquet of the Ohio State Veterinary Medical Association at the Deshler Hotel" says Dr. E. W. Brumter in reporting the meeting to the Alliance (Ohio) Leader.

Live Stock Poisoning

Edited by L. H. PAMMEL, Ph. D.

Professor of Botany, Iowa State College, Ames, Ia.

Supposed Forage Poisoning

Dr. T. B. Crowe of Chicago sent a sample of oats and corn which local people of Hillsboro, Ill., thought might have caused forage poisoning, with letter from G. H. Longwell, Agent Am. Railway Express Co., at Hillsboro, Ill., as follows:

"As per telephone conversation regarding above (company horse dead at Hillsboro, Ill.), this horse died in harness on Main St. at 1:30 p. m., apparently crazy. Dr. Harris, veterinarian, arrived in time to give horse a shot, but horse died in street in five minutes' time. Dr. Harris advised that he thought it was forage poison as there had been several horses in vicinity died in past two weeks, and to all appearance the same cause and Dr. Harris claims that forage poison is an infection of feed, and sometimes cannot be told and is found in the very best grade and sometimes in poorer grades of feeds. The team worked this with nothing apparently wrong. Very frisky going to stable at noon, ate noon meal. Had made about two blocks of delivery on Main Street when horse suddenly became crazy, falling, getting up and down behind, then down in front, on sidewalk and in gutter and driver F. F. Criswell had a hard time keeping him out of show windows and automobiles that were parked at curb. I am sending you under separate cover small samples of feed (corn and oats) taken from bins immediately after death of horse, for your inspection. (Signed) G. H. Longwell, Agent."

Letter from T. B. Crowe, veterinarian, is as follows:

"I am sending you under separate cover some corn and oats which was sent to me for examination to determine if possible if same was responsible for the death of this horse. I am enclosing copy of letter which explains the case. It is my opinion this horse died too quick for forage poison. Dr. L. A. Merillat advised me to send same to you."

The oats is somewhat weathered, not of good quality, with no external evidence of mould. I do not think it is the cause of the trouble.

The corn contains a great many mouldy kernels. In looking it over I find that 25% of the kernels are mouldy and the mould is mostly **Diplodia zeae** which is rather common this year in stored grain. Mouldy corn of this kind was common in many parts of the corn belt last year.

I do not, however, think from the symptoms given by Mr. Longwell that it is the cause of the very sudden death of the animals. This does not mean that the corn may not be injurious to animals. I think such mouldy corn should not be fed to animals.

MOLDY CORN

Dr. H. Vollmer of Nunica, Michigan, sends specimens of moldy corn and leaves and the following letter:

"Recently a client of mine lost two head of young cattle, age about 15 months, died quite suddenly. They were taken sick quite suddenly during the night. In the morning he found one down, lying flat on her side, head stretched out and flat on the floor, also feet and legs. She seemed nervous, pupils of eyes dilated, head seemed drawn back. She was slightly bloated and died in a few hours. The other was just about the same; temperature normal. These animals were not treated. They were in good flesh having good pasture until snow fell, then he brought them in and fed them cornstalks and a small amount of corn. The drinking water came from a drive well. We have some very moldy corn this year on account of a worm working into the ear early in the season. I am sending you some samples of it, also silage, although the young stock have not had any silage this year. Would you kindly examine this for me?"

We have examined the specimens and found a lot of mold, especially Fusarium and Monascus and some other molds. There is much moldy corn in the corn belt this year. There

is also much complaint about loss of livestock from the moldy corn. I have on several occasions discussed moldy corn in the Journal. Moldy corn, no doubt, under some conditions, causes poisoning.

We think it advisable that such corn should not be fed to livestock. This is especially true for horses. The danger is not nearly so great with horses and hogs.

WEEDS IN ALFALFA HAY

Dr. J. F. Callison of Ramsey, Ill., wrote me on March 2nd, 1922, as follows:

"I am sending by parcel post a sample of alfalfa hay, that we believed is poisonous. This hay came from the State of Colorado. There has been one death in the valuable herd of dairy cattle, and at the present time there is another animal in a grave condition. This animal (cow) started in with a temperature of 107 F. with trembling of the muscles of the fore quarters, staggering gait, reduced rumination, inflammation of visible mucusmembrane, frequent urination, weak and accelerated pulse, respiration is clear but accelerated. The animal that died I was unable to be present to hold an autopsy but the herdsman reported the kidneys contained pus, and the liver was darker than normal and very soft. Some of these cattle have had a diarrhea at times since being on this particular hay. The cow now under treatment has not this symptom, on the contrary we have up to the present time been unable to evacuate the bowels but have had her under treatment 18 hours. If you can enlighten us as to the nature of the weeds contained in the enclosed samples we would appreciate hearing from you at once. If the sample is not dried out too much on reaching you, you can notice a very peculiar odor in the smallest package enclosed.

Hoping I have given you some idea of the symptoms that will be of assistance to you, and that we may hear from you as regard to your findings as soon as convenient.

I received the two packages of weeds and so-called alfalfa hay. If this was sold for alfalfa hay it certainly was very far below the standard, because most of it consists of weeds of various kinds. It contains the following weeds: Pigweed (Amaranthus retroflexus), tickle grass (Panicum capillare), barnyard grass (Echinochloa crusgalli), western marigold (Dyssodia papposa), candy grass (Eragrostis major), and green foxtail (Setaria viridis). None of these weeds can be looked upon with suspicion, except the pigweed or the western marigold. The odor from one of the packages is no doubt due to the western marigold. You will find this plant described in my Manual of Poisonous Plants. You will find in this same volume a description of pigweed and an account of poisoning from the same.

It seems to me that the person who sold this material for alfalfa hay made himself liable by doing so. The material you sent is less than 10 per cent alfalfa and there is a good deal of the pigweed in it. The pigweed is somewhat prickly.

PLANT DERMATITIS

T. A. Sprague * makes a discussion of dermatitis produced by the family Anacardiaceae to which the poison ivy belongs. The writer calls attention to the fact that as early as 1702 a Frenchman who visited South America between the years 1702-12 related how some sailors suffered severely from cutting down some Llithi (Lithrae caustica) on the coast of Chili. Their hands on the second day had swollen to an extraordinary size and their features indistinguishable. The juice of this tree produces painful pustules and swellings on the hands and face. The record is also made that some persons do not suffer. The author records another plant of the Subalpine region of the South American Andes which is injurious namely the Rhus juglandifolia. Triana records some persons are very sensitive to its poisoning. The Gluta renghas (G. benghas) of the Celebes is equally poisonous and the timber after long drying is said to be injurious. Gluta coarctata, Mangifera odorata Semecarpus Anacardium of the same family produce dermatitis. The vanilla pods of the orchid family sometimes produce dermatitis but this has been attributed to the oil of cashew, a member of the poison ivy family, which is used to improve the color of the pods. The author states that Vanilla Griffithi of the Malay peninsula contains a slightly milk latex which is irritating to the skin.

*Journal of Botany 49: 308-310.

Colostrum milk according to the commonly accepted standards is unfit for human food. The Wisconsin regulation provide against its use from eight days before until four days after calving. The government standard is still higher extending from fifteen days before until ten days after.

Canine, Feline and Avian Practice

Parasites in Small Animals*

By O. V. Brumley, Columbus, Ohio

Director of Clinics, Veterinary Dept., O. S. U.

Show Predilection for Small Intestines

The majority of the parasites in small animals are found in the small intestines; small numbers are found in the cecum, colon and rectum. Each species of parasite has its particular location, and unless in unusual numbers, or under abnormal conditions, they will be found infesting an exclusive portion of the bowel.

Parasites, however, are frequently found in a very large number, and produce serious disturbances there, depending upon the species of parasite and the animal infested.

The most common parasites found in the intestinal tract belong to the animal kingdom, and are: Cestoda, Trematoda and Acanthocephala.

The Taenia Syndrome

The appetite is often irregular and while the patient may eat well its condition remains bad. Growth is checked, emaciation often develops, and the hair coat loses its normal lustre.

Taeniacide Therapy

As taenia, even in mild infestations, inconvenience the host more or less, it is advisable to treat them. A further reason is the possible infestation of man and herbivorous animals with the cyst form.

Hogs, cattle, sheep and show and hunting dogs not only improve in condition when the taeniae are removed, but the further propagation of taeniasis is correspondingly reduced.

The administration of a taeniafuge should be preceded by a purgative and a twenty-four hour fast. Many preparations have been employed with good results, but **male fern** is probably one of the most reliable. The oleoresin (small dogs 0.5-1.0; large dogs 2.-5.0; cats 0.2-0.5) may be used. An excellent mode of administration is to mix it with a dose of castor oil. The purgative action of the oil assists in the evacuation of the parasites.

(3) Hook Worm

This species of the nematodes inhabits the small intestines, preferring the anterior half, and, occasionally are found in the stomach. They attach themselves to the intestinal walls, wound the mucosa, eat the epithelium and suck the blood.

According to present evidence they produce a poisonous substance that inhibits the coagulation of blood and possibly also injures the host. Inasmuch as these parasites frequently move from place to place wounding the mucous membrane in many different places from which hemorrhage continues for some time, a severe anemia is soon produced. These traumatisms to the mucosa soon cause a severe enteritis with all of the symptoms of inanition.

The Therapy of Hook Worm

Treatment in hook worm disease must be directed toward the removal of the parasites. The common anthelmintics used for intestinal parasites in these animals have little or no effect on the strongylidae.

Thymol (.06-.6) is one of the best for this species, good results following its use in daily repeated doses. It is advisable to precede the treatment with a good dose of Epsom salts to free the intestines of food and the mucous with which the parasites are usually covered.

The object of the treatment is to have the finely pulverized thymol pass, only slightly dissolved, through the entire length of the intestines, and thus, by coming in contact with the parasites, destroy, or so disable them that they may be evacuated.

As thymol is very soluble in alcohol, fats or oil, and serious results follow its absorption, all medicines containing alcohol as well as all fatty foods (fat meat, milk, butter, etc.) should be withheld during its use.

It must be administered in a capsule thoroughly mixed with three times the amount of sugar to prevent it from collecting in a mass

as it would otherwise do as soon as liberated from the capsule and pass through the intestine with little or no effect on the parasites.

Should absorption occur with the production of toxic symptoms, a subcutaneous injection of magnesium sulphate (0.3) will often overcome it.

Nutritious and easily digested food (lean meat, rice soup, cooked vegetables) may be given during the treatment after which the best of food that the dog will eat should be allowed.

Stomachic tonics as iron, quinine citrate (0.2-0.3), tincture gentian compound (1.0-4.0) are useful to stimulate the appetite. These should be continued for some time. In a few weeks make another examination for parasites or ova, and, if present, repeat the treatment.

(4) Whip Worm

This parasite lives in the cecum and large intestines, and is less common than the species above described. It is also much slower in development, requiring three to four months to produce embryos, which, when introduced into the digestive tract, attain complete development in two to three months.

Life Cycle Simple

The whip worm does not require an intermediate host; embryonic development takes place entirely outside the body and the parasite must pass into the digestive canal while still enveloped in its shell.

This species is often found in animals affected with severe anemia, but it does not appear to play other than a secondary part in the development of the disease. When present in considerable numbers in the cecum, however, it may cause a chronic inflammatory condition by its repeated injuries to the mucosa. Birds are more often seriously affected than other animals.

Symptoms

Gradual emaciation and anemia are the principal symptoms. The appetite may be variable, and constipation and diarrhea alternate.

General symptoms are rarely noted, unless the infestation has been severe, when general anemia is noted.

(9) Demodix Mite

Etiology—Demodectic scabies is produced by the parasite Demodex folliculorum.

Symptoms

The early indications of demodex mange are the presence of isolated inflammatory areas from one-half to two inches in diameter. The hair covering them appears as though clipped off closely. The condition gradually spreads and may cover the entire body. Occasionally demodex mange occurs in the well named squamous form. In this there is only slight irritation and no marked inflammatory symptoms. The hair becomes thin, and gray white scales cover the skin.

This condition may continue without change for months especially when the dog is brushed and bathed frequently as may be done with house pets.

The disease makes progress by a gradual peripheral spread over the skin, or less often by the occurrence of new isolated areas over the body. The skin thickens, pustules develop and erupt forming crusts; the hair falls out. Emaciation follows and the animal becomes cachectic and exhausted. Pruritis is present from the beginning and frequent scratching and rubbing is the most noticeable symptom.

Therapeutics

Mild localized cases may be treated without washing or brushing. Generalized cases with crust formations require thorough cleansing with soap or alkaline solutions and all hair removed. As the demodex live deep in the skin glands it is obvious that severe and vigorous treatment is required to effect recovery.

Every parasiticide known has been used either alone, or in combination without success. One mixture deserves mention as many cases have recovered after its prolonged use. It is not toxic, and will not be licked off.

℞

Creoline	30.0
Phenol	15.0
Sulphur flor	60.0
Ol terebinth	120.0
Aq. Ammonii	90.0
Ol. lini	600.0
Kerosene	1200.0

M. f. Emulsio.

Herpes Tonsurans. Ringworm. Red Itch

Symptoms—Ringworm occurs in all small animals but is most common in the dog. The lesions may be found on any part of the skin but usually appears on the head and legs, parts frequently in contact with objects harboring the parasite.

Ringworm is characterized by small, well defined circular areas. By increasing in size

and number they merge to form irregular, large patches. At first slightly reddened, these areas soon are covered with their dirty, gray crusts or scabs. Irritation is variable; at times it is very intense inducing scratching and rubbing which removes the crusts and leaves the surface raw and sometimes bleeding. Small nodules are sometimes seen, due to swollen hair follicules. Most of the hair is broken off. On these areas where pruritus is absent the crusts remain, become thicker and agglutinate the hairs. Suppuration proceeds beneath the crusts and an offensive odor is emitted.

In general the condition is less severe and more superficial than sarcoptic scabbies, but the spread is more rapid. When the condition involves a greater part of the body general disturbance follows. Suppuration beneath the scabs permits of the absorption of toxins which poison, and the constant irritation exhausts the animal.

Treatment

In a generalized case, except in short haired animals, remove all of the hair. Where only isolated spots occur clip the hair well back from the margin. Remove the crusts, softening them if necessary with lard, oil or ointments. Cleanse the skin by washing with a soapy or alkaline (sodium carbonate) solution.

Creolin or iodin ointment is recommended and gives good results. These may be applied once daily for a week followed by a thorough cleansing. Continued treatment depends upon the appearance. Small areas may be treated with pure tincture of iodin, two or three applications a week. A strong solution of bichloride of mercury (1-500) is also quite efficient. Careful inspection must be made frequently for new disease areas. **Powdered aloes** will prevent the patient's licking off the ointment.

* Ext. Report. Ill. S. Vet. Med. Ass'n. 1921.

FOLLICULAR MANGE IN A DOG

I have a dog under treatment that seems to have a typical attack of follicular mange. I have given several courses of treatment with no results. With the exception of the legs the entire body is affected and in certain regions the skin is entirely bare and wrinkled up like that of an elephant. Is there any treatment that will help?

Reply: Dr. Flynn at the clinic of the Missouri Valley Veterinary Association, at Kansas City, February 2nd, 1922, exhibited a dog that seemed to have been cured of a diffused case by applications of formalin solution. After washing the body well to rid the sore places of scabs a one per cent solution of formalin is applied all over the body. As the stinging pain of this drug causes considerable agony the body should almost immediately be annointed with a bland oil or soothing ointment.

PRESCRIPTIONS FOR DOGS BY DR. SCHRECK

Parotitis

℞

Ichthyoli .....
Plumbi Iodid ..... aa ʒ ii
Ammonia Chloride ..... ℥ iv
Adepts lanæ hydrosi..... ʒ i

Misce. et. fiat ungentum.

Sig.—Apply to swollen glands.

Indications: Used to relieve swelling and pain.

Pharyngitis, Angina Catarrhalis, Sore Throat

℞

Ext. Gambir ..... gr. xxx
Codelinæ ..... gr. iii
Ext. Glyeyrrhiza ..... ʒ iss

Misce. et fiat Chartular No. XX.

Sig.—One chart on tongue every three or four hours.

Indications: To relieve inflammation in acute cases and relieve cough.

Gastritis (Acute)

℞

Chloroformi ..... ʒ i
Tinct. Opii Deod..... ʒ iss
Mentholis ..... gr. i
Magna Bismuth qs..... ℥ iv

M. Sig.—Teaspoonful every one or two hours as the case demands.

Indications: To relieve pain and check vomiting.

Intestinal Catarrh

℞

Olei Ricini ..... ʒ iv

Sig.—One dose.

Indications: Initial treatment to free the bowels of all irritating materials. Not required if evacuations have been profuse and watery.

℞

Tinct. Opii camphorated..... ℥ i
Bismuth sub-nitratis ..... ℥ iv
Aqua cinnamomi qs..... ʒ ii

M. Sig.—Teaspoonful every two hours as case demands. Shake. Less often as improvement is shown.

Indications: Used in acute catarrhal enteritis after evacuation of irritating materials.

INVESTIGATIONS ON THE PREVALENCE OF AVIAN TUBERCULOSIS AND ITS CONTROL WITH AVIAN TUBERCULIN[2]

The author found avian tuberculosis very prevalent in Germany, and recommends for its control the tuberculinization of the flocks at least once a year. Newly purchased birds should not be placed in the flock until proven free of tuberculosis by the tuberculin test. Hatching eggs should be purchased only from flocks known to be free of the disease. All tubercular carcasses should always be properly disposed of as they constitute a menace not only to the poultry but also to hogs and other animals.

The intracutaneous injection of avian tuberculin induces in tubercular chickens a definite characteristic reaction. The test should be made with avian tuberculin since this produces a more pronounced reaction than any other kind of tuberculin. The injection is made into the wattle. The technic and interpretation of the results are not difficult. Considerable skill may be attained by practice and accuracy of the work. A positive reaction is characterized by the appearance of an odematous swelling on the injected wattle which somewhat varies in intensity becoming most pronounced in from 24 to 48 hours following the injection. The swelling disappears in from 3 to 5 days.

The reaction is specific. Only tubercular infections will induce positive reactions. Other diseases will not cause a reaction. As for instance, in fectious leukemia which has been formerly considered as a form of avian tuberculosis no reaction appears following the tuberculinization of such infected chickens. Birds giving a negative reaction should not be considered entirely free of tuberculosis. At times even repeated testing of cachectic birds which are affected with old extensive tuberculosis failed to give a reaction. Such birds, however, may be picked out by a clinical examination of the flock. The author is of the opinion that the intracutaneous injection of avian tuberculin offers a very useful and dependable agent for the early recognition of avian tuberculosis.

Tuberculosis of fowls is much more prevalent than is ordinarily suspected. The principal source of infection is the droppings of tubercular fowls. There is a possibility of the transmission of infection in eggs. The sparrow is susceptible to avian tuberculosis and may be a factor in the transmission of this disease. Fowls may become infected from the carcasses of tubercular fowls. The farmer and poultryman are concerned with the health of their fowls and the veterinarian can render a valuable and appreciative service in this work.

2. Deut. Tier. Woch.

AVIAN TUBERCULOSIS

I am sending a chicken for postmortem examination and diagnosis. The chicken in the flock whence this one originated seem to be healthy and eat well until the last. Over 100 have died last year and about 140 this year. The younger ones are beginning to die. They are fed oats, corn and some bran and have the range of the barn yard.—J. A. K., Ill.

REPLY. The chicken was killed as soon as received and the postmortem examination revealed typical miliary tuberculosis. The bacteriological examination showed many tubercule bacilli, especially from the liver specimen.

There is but one way to handle such a badly infected flock and that is to kill them all and start with new ones after clearing up the coops and other places where infection may occur.

Valuable individuals of such a flock might be given the tuberculin test with the view of conserving the non-eaters for breeding.

Veterinarians who are public spirited should grasp the opportunity offered by the war department to join the veterinary reserve corps. It is the one opportunity we shall have of showing whether there was any sincerity or not in our demands upon Congress during the past thirty-five years.

Press announcements that the death of Gwendolyn Armour, the six-year old daughter of Philip D. Armour III, of Chicago, Illinois, April 3, 1922, was caused by milk-born streptococci has been refuted by the attending physicians. Dr. Frank S. Walls, baby specialist, cast doubt on the theory that the infection originated with the milk and this opinion was confirmed by Dr. VanDerslice, who stated that the certified milk the child drank was in no way at fault and Mr. Owen W. Rollins, owner of the farm, has declared that the milk was as sanitary as ingenuity can make it. Thus another milk scare goes flooey.

Queries and Answers

PREMATURE LACTATION IN A MARE

I have a patient a good big healthy looking mare. She is due to foal about May and she has quite a large udder and is losing milk like a mare going to foal in a few days. She is in good order and feels well and gets good care. The milk runs more when she is moving, especially when she trots along on the road. It will run out in a good stream, both sides. Do you think it will make the foal weak? Your advice on this case will be much appreciated. —G. S. S., Que.

Reply: It is always a misfortune when the period of lactation begins so long ahead of parturition. So often this event presages premature delivery. It is best not to attempt either local or internal medication but see to it that the mare is given excellent care and only such exercises as will maintain a good state of health.

I doubt very much the wisdom of working such an animal in harness, and believe that overworking may be the cause of the whole trouble.

OXALIC ACID IN AZOTURIA

May I ask for information on oxalic acid? There is much said about its use in the treatment of azoturia, but I can find no literature on it.—F. L. O., Minn.

Reply by Dr. Quitman: Oxalic acid first came into repute or perhaps I should say disrepute, some years ago in a proprietory preparation under the name of "Azolysin" preconized and exploited by a veterinary practitioner as a sure cure for azoturia. It was a fake pure and simple and in spite of extensive advertisement it failed to make good.

Country azoturia cases recover on almost any treatment or in spite of treatment and it is to this fact that azolysin and other azoturia cures gain passing reputations.

When the formula of azolysin was finally made known it was seen that oxalic acid was the curative (?) agent it contained. On account of the wide publicity azolysin through advertisements, veterinary supply houses to supply a demand put oxalic acid the drug on the market in four grain tablets which was the dosage in azolysin. (The human dose, although the drug is practically never used internally, is given at from ¼ to ¾ gr. very well diluted.)

The only physiological actions accredited to the drug is that of a caustic and paralyzant to the vascular and nervous systems.

The inventor claimed to have found this drug to possess wonderful solvent, alterative and eliminant action. However, I believe he is alone in this discovery (?). Such discoveries are common in patent medicine trade.

Azolysin also contained coniine hydrochloride to control the delirium. This was the only bit of merit in the preparation.

I am sure the curative action of oxalic acid is nil.

TREATMENT OF SUPPURATIVE MASTITIS

I am having considerable trouble with mammatis in cows; their udders go on to suppuration and the cows become weak and emaciated and finally die. It seems to be very prevalent in my territory. New cases are coming up every day.

I have used hot applications to the udder for several hours and arecolin and magnesium sulphate as evacuants at the onset. Used mastitis mixed bacterins, six cubic centimeters every 24 hours until three or four doses had been given and every second and third day thereafter. I give formalin one dram, once to twice daily with nux vomica. I used poke root ointment to the affected quarters, put the udder in a suspensory and applied a flax seed meal poultice.

These cases go on and get worse. What I am earnestly praying for is some information that will help me to get better results. Can you give me help? If not, who can?—W.L.H., Indiana.

Reply: As you are having so many fatalities it is likely you are dealing with an exceptionally virulent infection, yet we are inclined to the belief that you are not making enough effort to drain out the contents of the sinus during the early stages. It is better to make

a bold incision right into the sinus rather than to allow the inflammatory process to advance beyond control. Ferguson, in lieu of lancing, recommends amputation of the teat right at its base as a drainage expediment.

BLISTER FOR DECLINING LACTATION

In case where a cow is gradually drying up in one quarter without at any time showing signs of active inflammation, is it possible to restore milk secretion partially or fully by applying a rubefacient, or a mild blister, periodically, at the same time manipulating the teat of the affected quarter, as in the act of milking. If so, at what intervals should the application be made, and what drug would prove to be more satisfactory?—E. A. S., Washington.

REPLY: The application of irritants to revive declining lactation has been practiced with good success by many veterinarians. It is very important in applying these to prevent blistering the teat and that part of the quarter immediately above it because the tenderness resulting therefrom causes pain on milking as the skin of the udder is delicate. It is seldom possible to administer but one blister, the irritation from which will require almost a month to disappear. We use cantharides ointment at the strength of one part cantharides to sixteen parts of lard.

FORMULA FOR PANTING HORSES

Some time ago I saw a formula for horses that pant in extremely hot weather in VETERINARY MEDICINE. I have either mislaid or lost the journal it was in, and would appreciate it very much if you would reprint this formula. —M. D. R., Pa.

REPLY: The following is recommended for horses that do not sweat and as a result pant, and suffer severely from the heat. Clip and give:

℞

Tr. arnicae rad.
Fldext. pilocarpi.
Spts. Aeth. nit. aa ʒ iv.

M. Sig. Give three ounces in one-half pint of water, three times daily until the skin secretion is improved. Then it may be cut down to twice daily until the secretion of sweat is fully reestablished.

In addition to the above place the patient on 2 to 6 dram doses of Fowler's solution of arsenic three times daily in the feed. Also give one to two handfuls of linseed meal mixed with each feed.

ARTICULAR TUBERCULOSIS IN PIGS

The specimen I am sending you is the hock joint of a pig that was killed for the purpose of making a diagnosis on other similar cases that occurred in this herd during the last two years. The trouble seems to be rickets but it fails to respond to any treatment for that disease that I have been able to work out. Some time ago a local laboratory found tubercle bacilli in the same kind of specimen and I am very anxious to find out if they were correct and if this is actually joint tuberculosis and just why it should take this particular form in this herd.

REPLY. We were unable to find any tubercule bacilli in the specimen, but as the lesion and the previous findings seem to indicate tuberculosis we would like very much to have other specimens. In the meantime, the source of the infection should be sought out particularly among the milk products they are receiving in their food.

FILARIA OCULI

I have a case that I would like to ask you about.

A registered mare has a white thread-like worm in the aquous humor of the left eye. Is there any instrument manufactured to remove this? Is it advisable to operate? The worm is so active that it keeps up enough inflammation to give the eye a whitish blue appearance. I should judge it is an inch and a half in length. Awaiting your reply, I am—J. W., Man.

REPLY (by Dr. Quitman)—Regarding the removal of a white thread-like worm in the aqueous humor of the eye, in a registered mare, will say that this parasite is most often the Filaria oculi and the only way to remove it is by an operation, which is a very simple one.

The eye should be thoroughly irrigated with a saturated (4%) solution of boric acid, then by slowly dropping a 4% solution of cocain on to the site of the operation, the eye should be anesthetized. Then, with a paracentesis needle or a very fine eye lancet, puncture the cornea in its most dependant part, running the instrument through the cornea in an oblique manner, being careful to avoid the iris. Then, with the exercise of a little pressure on the ball of the eye, so as to cause a forceful stream, the worm is usually carried out with the humor.

THROMBOSIS OF THE ILIAC ARTERY

Please advise me what the following described condition is: Clydesdale gelding, six year old, weight about 1,400 lbs., apparently in good health when at rest but upon exertion shows an affliction of the right rear leg. The following is the history obtained by me.

Was called in for consultation and observed that the animal walked without the slightest inconvenience, but upon a little run showed a slight lameness which increased upon continuing this exercise. We hitched him to a light cutter and drove on a gentle walk (just previous to this the lameness had subsided and started out fresh) within a half mile he showed lameness again and increased to the extent that he was compelled to stop. He was unhitched and replaced by another horse and he was led behind, this rest sufficed to take him another twenty rods and then rest, this was continued for a course of a half mile. He was placed in a stable for six hours then proceded on the journey of another two and a half miles. His first half mile was accomplished without any lameness but thereafter it became evident and increased gradually to the extent of inability to bear weight upon it. A rest of ten minutes recovered him so he could walk twenty to forty rods at a time. Towards the end he was pressed for a longer space but it resulted in such pain that he laid down in agony. A rest of thirty minutes was given on the last half mile and this sufficed to take him this distance but was exhausted. He was in a profuse perspiration.

As I said before, he is apparently in perfect health when at rest, no abnormalities of any part of the leg including the lymph glands. A history of his castration could not be had, but the spermatic stub is a little longer than the other side. I took a series of temperatures they proved normal. Eats and drinks well.

Any information as to the cause and the treatment, if any treatment of this condition, will be greatly appreciated.—H. C. L., Sask.

Reply: The Clydesdale gelding you described is affected with thrombosis of the iliac artery on the side showing the lameness. If you will make a comparative palpation of the two iliac arteries you will be able to locate the trouble.

Dissection of the Iliacs of a Horse Dead from Iliac Thrombosis

It is very likely that a case so very severely affected as the one you describe will also show some hardening and obstruction at the aortic quadrification and it is also likely that the left side is slightly affected.

The horse is incurable. Nothing will help.

LIQUID BLISTER

Would you kindly give me a formula for a blister similar to Fleming's liquid blister, and instructions for use?—J. H. B., Wisconsin.

Reply: The best liquid blister that we have ever used for general horse practice and which will meet about every requirement, consists of:

Tincture of iodin, 1 ounce;

Powdered cantharides, 1 dram;

Denatured ethylic alcohol, sufficient to make one pint.

This combination, while showing a little sediment of cantharides, may be made weak or strong by the mere changing of the iodin and cantharides content, and we think answers every purpose.

The directions are shake and apply every day until the part is well blistered. The alcohol should not be denatured with methylated spirits, because the latter even in small quantities is incompatable with iodin.

INDIGESTION IN SHEEP—BACTERINS WRONGLY BLAMED

A client recently purchased a carload of feeding lambs that came from Montana. They were unloaded at a place west of Chicago and put on dry feed for about a week. They were then shipped from there to Michigan, arriving here the evening of November 5th, all in good condition. They were driven about a mile, put into a modern sheep barn and given a feed of clover hay.

On November 7th, I administered to each one of the lambs (328 all told) a dose of hemorrhagic septicemia vaccine for immunization, this disease having appeared on this farm in the fall of 1919 with a loss of about 50 head in a flock of 400 animals. Since then, the barn has been thoroughly cleaned and disinfected.

On November 9th, a few of these lambs were noticed to be scouring, and on November 11th, when I saw them, nearly all of them were scouring badly and were a discouraging looking mess, gaunt, humped up and a listless expression. Only a few have refused to eat. On taking the temperature I found that it varied from 103° F. to 104.5° F. The feces passed are a thin dark-colored fluid, no odor. Some of them strain so hard that they bleat in the act. Respirations normal and not any discharge from eyes or nose.

No fatalities have occurred to date and the owner is not willing to sacrifice one for post-mortem examination.

They were being fed third cutting alfalfa hay mixed with clover and about 100 pounds of oats twice daily and have access to good, clean water at all times. The owner declares that the bacterins are at fault and I am at sea to know to just what source to lay the blame.

A flock of natives in other side of barn and the breeding ewes receiving the same quality of feed appear to be all right.

If you can help me out in the cause and suggest a way of handling the situation, I will be very thankful.—F. M. M., Michigan.

REPLY: We are of the opinion that the trouble with your lambs is due to the change of feed.

Lambs coming to the North Central States from the west very often suffer from very severe digestive troubles after eating their first few feeds of clover. The fall clover pasture has been particularly harmful.

There is nothing you describe about this disease that could incriminate the bacterins. If this herd is kept on very low diet, given access to plenty of fresh water, they will recover, with very little loss.

Bad cases that bloat might be isolated in separate pens and given some form of antacid or intestinal antiseptic treatment.

MULE NEEDS NO DOCTOR; TREATS SELF

Subject: 14-16 years old mule, 1200 pounds, long haired, belonging to a turpentine distilling company. Due to business depression this mule was leased for its food to a tie contractor and farmer last November. One Saturday night the mule, with the others, was turned out after work hours in a field to save a barrel of corn and a couple of bales of hay. Sunday morning it was found slightly ailing, which was attributed to a few chenopodium leaves, which were thrown over the fence for some hogs, which this particular mule was seen to eat.

In passing by, I was called. The symptoms were temperature, pulse, and breathing normal, peristalsis very weak, conjunctiva not congested, no rolling, lying easy, bringing head to left side once in a while.

Diagnosis: Impaction. Treatment: One quart light lard and a pill of nux vomica, about 60 grs. I promised to return if the mule was reported no better. In 25 minutes mule got up, shook itself and began to eat. The next afternoon the teamster noticed a mass of worms, which, when shoveled into a peck measure, filled it more than half full of ascarids. Am, of course, unaware whether chenopodium was 100 per cent effective or not as no further treatment was desired, but there was a decided change for the better in the mule's condition in about three or four weeks. The amount of green chenopodium tops and seed eaten must have been at least five to six quarts.—**Anon.**

Pointed Discussions of Live Topics

By READERS of VETERINARY MEDICINE

Courtesy of Professor J. L. Edmonds, Univ. of Ill.

The farmer who would sell his horses and invest the returns in a tractor and tractor-drawn implements would have little left in five years, while the one who kept them would have a power unit of precious animals and a surplus to sell at a good price.

Infectious Alopecia

By Dr. Herbert S. Perley, Hanover, N. H.

ON July 6th, 1921, was called to treat a black gelding seven years old, weighing 1200 lbs. He had been shipped from the West three years ago and had never been sick since reaching this part of the world. History was not very complete. Owner said that the animal was not sick and was doing the required work (farm work) well enough, but seemed dull and although eating well, was losing flesh. The examination showed swelling of left hind leg, and enlargement of the sheath. The pulse was normal and the temperature 101°. I gave a purgative and advised light feed. Two days later I found both rear ankles swollen with no swelling above the fetlock and sheath twice normal size. At the end of each hair of the coronary band was a drop of bright yellow liquid the size of a pinhead. This liquid was also found on the hairs around the left nostril, giving the impression that the nostril was discharging, which was not the case. I was informed that the purgative had operated. The pulse remained normal. The animal was getting exercise and was eating everything put before him. I gave sodium cacodylate. The next day the swelling of legs had extended as far up as the hocks and sheath swelling was enlarging. The temperature and pulse had not changed and appetite was good.

I now began to dig for history and found that the animal had never sweated even on the hottest days but had never had sunstroke or heat prostration. The hay in the mows was almost gone and what there was left was of very poor quality and three or four years old. My diagnosis now was uremia from arrested sudation and overtaxed kidneys. I observed at this time that there was quite a quantity of dandruff and that on rubbing the neck and ribs, it fell off in a shower. There was also some ventral swelling. The gait was stiff but the animal had no difficulty in getting up or down and could step about without difficulty.

The hair was beginning to fall off around the coronary band and the yellow exudate on the hair extended up the legs to the fetlock. The bowels were working nicely and the feces were soft and normal in color and odor. I advised that animal be allowed to run loose where it could get grass instead of hay and that a cooked bran mash be fed once a day. The animal was groomed twice a day to encourage skin action and sodium cacodylate continued. Two days later the hind legs were very much

enlarged to the body and the swelling on the abdomen was two inches thick with abrupt borders. The nostrils and lips were swollen, and the appetite as good as ever. The temperature was 101° and pulse normal but a little weak. The kidneys had been secreting a normal amount of urine, and continued to do so. I gave a heart tonic and adrenalin. In twenty-four hours the swellings had all increased in size, that on the abdomen being three inches thick and extending forward to the chest and down the fore legs. The temperature was 101.5° and pulse stronger. The animal still ate well and moved about, was very stiff and was still able to get up and down without aid. I told the owner that I did not know what I was dealing with and offered to call another veterinarian in consultation. This he did not care to do, so I dropped the matter. On the next day the animal was worse, the swellings were larger and for the first time, the animal was depressed and showed signs of collapse.

As I now considered the case hopeless, took another veterinarian to see the case. He was unable to diagnose the trouble or to advise any further treatment. Twelve hours after this visit the animal was down and showing signs of pain. Half an hour after going down there was not a hair left on him except the mane and tail and they would come out at the slightest touch.

Every particle of swelling had disappeared also. I tried to quiet the animal with lobelin sulphate and morphin, as the owner did not want to destroy him. The above had no effect so I resorted to a big dose of chloral hydrate administered with a stomach tube. This quieted him and he passed off easily six hours after going down.

Of course I thought up some wonderful theories to explain the almost instantaneous disappearance of the swellings and the falling out of the hair, also what I would find postmortem, which was made about six hours after death.

Autopsy: The entire skin was without hair and looked similar to that of a hairless Mexican dog. It was smooth and tough. The immense swellings of legs, abdomen and chest were gone. There was no sign of the dandruff that had been present in large amount up to the time of death. No tympanitis and no discharge from nose, mouth, nostrils, ears, anus or sheath. Internal organs appeared normal with the following exceptions: Kidneys slightly inflamed and enlarged. Iliac lymphatic glands very much enlarged and hyperemic. All other lymphatics normal. Lungs and heart normal. No fluid in either thoracic or abdominal cavities. No abscesses. I cut through the skin in twenty or more places, head, neck, legs, back, etc., and at each incision found the muscular tissue of a pinkish tinge, closely resembling bob veal and filled with gas. On making the incision the gas would bubble out of the muscular tissue. I cut down to the femur and humerus and the same condition existed all the way to the bone. Along the spine at different places, cervical, dorsal, lumbar, etc., the same condition was noted.

I may add that after going down and appearing in pain, the temperature rose to 104° F., and the brain became involved. I am not going to advance any theories of my own, but would like to have this case reported in VETERINARY MEDICINE. Was this botulism?

Comment: There is no part of the symptom complex of this case that would justify even a suspicion that the B. botulinus was the responsible agent.

Perley, on the contrary, graphically describes a typical case of infectious alopecia, a rare enough entity, but nevertheless occasionally encountered in an equine practice. In several cases we have seen, we have been able to isolate a microbacillus that gained entrance through the hair follicles. The disease usually begins at several different places in the body simultaneously and gradually advances in every direction until the whole body is affected, unless the process is arrested by very energetic treatment.

If the parts of this animal's body first showing indications of seborrhoea had been clipped, scrubbed thoroughly with a strong mercuric chloride solution and then briskly annointed with mercurial ointment the process may have been arrested or at least kept under control.

A Colleague Asks

10. When a cow eats 60 pounds of corn and is sick and can't get up, what drug will remove the cause?

11. What drug will physic the corn from the rumen?

12. Why do they infect healthy animals with germs that make them sick?

13. If diseases are contagious where did the animals first contract them?

RECOVERY OF A VERY ACUTE CASE OF TETANUS IN A MARE

Pure-bred registered Percheron mare, weight 1850 pounds, December 20 stepped on a nail and developed a case of acute tetanus in seven days. The prognosis was reserved. I treated the wound with tincture of iodin and phenol, equal parts daily. She received during 21 days 86,000 units of tetanus antitoxin. She made a nice recovery as shown in the photograph herein enclosed.

Escondido, Calif. J. H. Hogan, M. D. V.

Comment: In the April number of the Bulletin de la Societe de Medicine Veterinaire, Barlette reports two interesting cases of equine tetanus that was cured with intra-

Fig. 1. A Case of Very Acute Tetanus

muscular injections of antitoxic serum. The one infected through a poll-evil was treated from the very onset of the symptom. It was given 21 doses of serum of ten cubic centimeters each in the masseter and cervical muscles, together with hypodermic injections of pilocarpin and some diruetics. The cure

Fig. 2. Recovery Complete

was complete in 17 days. The other was a mule that was cured in 15 days with 20 doses, four per day. Barlette insists that intramuscular injections into the masseters has an influence on the trismus and that this method of delivery should be the one of choice.

CHRONIC GASTRITIS

A curative measure of the highest importance in treating chronic gastritis in the small animal is the "Skim Milk Cure."

This consists in the exclusive use of milk for food until the stomach is free from materials of fermentation and has had sufficient rest to recover, a period of time determined by the cessation of the symptom for which it was prescribed. During this time nothing whatever should be given the animal, except a laxative to relieve the constipation, or medicine for other purposes; but no medicine should be given during the course of the milk cure unless imperatively demanded.

Dr. Oscar Schreck.

New Haven, Conn.

FOOT ROT IN SHEEP

In muddy weather in the spring often comes foot rot in sheep, which may be either the sporadic type or the genuine lip-and-leg ulceration, due to the bacillus necrophorus. When the latter is suspected or diagnosed, of course, a report should be made to the federal authorities.

A formula which has given good satisfaction in general foot rot is the following:

Acidum arsenosum — lb. vi.

Potassii bicarbonas — lb. ix.

Boil these together in 20 gallons water until dissolved, stirring thoroughly. This usually takes from 15 to 25 minutes. Then add 80 gallons warm water, and mix well. Drive the animals through this solution, which should be kept about lukewarm. The depth should be regulated to the extent of the lesions.

In small bands, in addition to the above treatment, one can resort to drastic surgery, and paint pure Balsam Peru (without or with one per cent silver nitrate) over the sores; this will often keep the claws and even the whole hoof from dropping off.

If at all possible, disinfection of the corrals with lime and sulphur, coal tar dips or a weak solution of copper sulphate. However, "aseptic precautions" are slightly out of place in a band of 3,500 or more ranging over an area larger than Rhode Island.

Moscow, Idaho. E. T. Baker.

Lowe Spays a Pregnant Bitch

Dr. John Payne Lowe reported a case where he spayed a bitch and on opening the abdomen found that there were several small embryoes in the horns. He removed the ovaries, but did not disturb the horns, and since then the

owner has informed him that he has noticed nothing abnormal about the dog since the operation. It, of course, leaves the question unsettled, whether he aborted or the embryoes have become mummified.

FATALITIES AFTER DEHORNING

During the past couple of weeks I have had a peculiar case or occurrence. It has to do with sweet clover ensilage, which is becoming more in use as a fodder for animals throughout different parts of the country. This case might be of interest to veterinarians as well as to stock owners.

On December 22nd I was called to dehorn five yearlings which were in good condition. These animals had been fed on sweet clover ensilage, straw and some hay. There were other animals in the herd without horns.

At 2:30 p. m. I arrived at the farm, and, having no difficulty, I removed the horns from the five with clippers by 3 o'clock. As the animals were dehorned, they were turned loose in the yard. Out of the five there were only two horns spurting blood when I returned home. The weather being mild, my instructions were to leave the animals outside until the bleeding ceased.

The animals were stabled in a large box stall at 5:30. Upon examination by the owner, after partaking of his evening meal at 6:45, he found one lying dead and another unable to rise. The remaining three walked outside again apparently as well as ever.

After having learned what had taken place, I returned to the farm, and to the one unable to rise I administered alcohol, sulphuric ether and fluid extract of nux vomica, blanketed and propped up on sternum.

Having finished with this one for the time being, we examined the three outside and found the largest one unable to rise, so we drew it in on a drag. The remaining two walked in, but immediately lay down, and in twenty minutes all three were dead. At 9:30 p. m. they all got stimulants except the last one.

The symptoms were similar in all four. In the other one, in addition to the symptoms shown by the four, were cerebral symptoms. He would raise his head and go over backwards or shove against a corner. After a spell he would fall and lay quiet for a minute or two. This animal took about six of these spasms before dying. The other four seemed distressed more than in pain. They were very weak, pulse about 140 and weak, temperature slightly below normal, unable to hold head up or lay upon sternum unless propped. I did not hold a post mortem examination, but on severing the carotid artery after the heart ceased to beat, about a pint of blood came away which was very dark.

I would like to hear through Veterinary Medicine from anyone who has had similar experiences or from anyone who can account for the change which took place to cause death.

My own solution is, silage—especially sweet clover silage—is very acid in reaction. The absorption of this acid solution from the alimentary canal to replace the lost blood has changed the blood from a normally alkaline reaction to an acid reaction which, I understand, means almost sure death.

The animal with cerebral symptoms might be accounted for by loss of blood from that organ or from a thrombus caused by action of acids on protoplasm, etc., of blood.

Could any other treatment have been used with success? Had I, when I first arrived, injected an alkaline solution intravenously, would there have been a chance of saving some?

I think anyone about to dehorn or perform any operation entailing the loss of considerable blood on animals being fed on sweet clover ensilage would be well advised to have the animals' diet changed for a couple of days preceding or administer large doses of bicarbonate of soda or some such alkaline solution.

I hope this will be of sufficient interest to appear in the Journal.—F. R. P., Ontario.

UNKNOWN DISEASE KILLS MANY EWES IN KENTUCKY

For the third consecutive season, an unusual condition again is developing among sheep in the State and causing the death of from six to eight per cent of the animals in different flocks, according to a report from the Kentucky Agricultural Experiment Station where studies are being made to determine the nature of the trouble and the best methods of controlling it. Observations made indicate that the condition occurs during February and March and is confined to ewes in advanced pregnancy. It is said to be fatal to practically 100 per cent of the animals that become sick.

Early symptoms of the disease are sluggishness and a tendency to lie down. Infected animals get up with difficulty, walk with a staggering gait and often with the head held to one side. As the disease advances, mus-

cular twitching may set in and the animal stands with its head pressed against some object. Animals showing symptoms of the disease grit their teeth, gradually lose their appetite, become blind and breathe laboriously. The temperature remains normal. Before death, the animals become prostrate and move their feet while lying on their sides.

While a number of investigations have been made on the disease, veterinarians at the station have been unable to find infectuous organisms connected with it, attempts to transmit the disease to other sheep have been unsuccessful and no growth has been recorded on culture media inoculated from the blood and tissues of sick animals. In several cases, sick sheep were given an injection of Botulinus antitoxin in an effort to determine the relation of the disease to forage poisoning but in no case has the animal been benefited by the injection.

Preventive measures being recommended by the station veterinarians suggest that pregnant ewes be given good care with as much variety of feed stuff as possible and that laxatives, such as salts or oil, be used freely. Exercise for the animals also is recommended. Agr. Ext., Ky.

AN OPINION OF TURPENTINE

If all the numerous medicinal agents and even the modern panaceas for all ills, the biological products, were taken from us we need not dispair as long as the pine tree grows and from the sap Turpentine can be distilled.

Turpentine is not a new remedy but is fortunately a cheap one, which paradoxically as it may sound, is I believe one of the reasons why it is not more universally used.

A Very Old Remedy

Ancient physicians were well acquainted with the medicinal properties of turpentine and used it in a great many other diseases besides those for which it is prescribed by the modern practitioner.

In one of the old veterinary works published in London in 1737 the author, Henry Boutken, M. D., expressed his opinion of turpentine as follows: "There is no one thing in nature but turpentine, that is endowed with such sovereign virtues in respect to healing of outward as well as inward wounds and ulcers and other systemic complaints and I make no doubts of the possibility of so managing the matter that by judicious use at proper times, that an animal body may be made proof against detrimental external influences as well."

Externally

Applied to the unbroken skin, turpentine acts as a violent irritant, causing heat, redness, vesication and even ulceration if used repeatedly, but properly and scientifically handled, it is a valuable stimulant and counter irritant.

Internally

Internally administered in medicinal doses, it is a stimulant antispasmodic and anthelmintic acting on the vaso-motor sympathetic system.

In being eliminated from the body, it acts on the particular excretory channel, expelling it. In large doses it is, therefore, a cathartic and in smaller doses a diuretic and diaphoretic.

In horses turpentine is serviceable in indigestion and overloading of the stomach, especially when accompanied by flatulence and even in some cases of diarrhoea, owing to its stimulant, antiseptic and invigorating effects on the mucous and muscular coats of the intestines. It is a prompt antispasmodic in colic, and in purpura it is one of the best remedies, stimulating the heart, bracing the dilated weakened vessels, and exerting haemestatic and antiseptic properties.

Its stimulant, antiseptic, diuretic and diaphoretic actions renders it useful in rheumatism of all animals in which it can be used both externally and internally.

Therapy

In cattle practice full and repeated doses are valuable in hoven, and in chronic diarrhoea and dysentery the animal is often benefitted by a few doses combined with aromatics. With iron salts it will check haematuria.

As an anthelmentic, turpentine should be given after the bowels have been emptied by a cathartic and with a laxative, usually linseed oil is the most available.

It is one of the best, if not the best remedies known for removing bronchial filiria in calves when given in proper solution by the mouth.

A few drops of a solution made with one part of turpentine and eight of milk placed in the mouth kill the gap parasites of poultry. A dressing of one part of turpentine and two of olive oil sprinkled outside the throat of chickens is partly absorbed and helps the destruction of the parasites.

In conclusion there is only one organ in the whole animal economy where turpentine cannot be used with benefit and that is the eye.

—Henning.

PERIODIC OPTHALMIA

(Continued from page 218)

hours from inoculation, when a cloudiness appears at the surface spreading to the whole tube, with late development of a surface film. Gelatine not liquified, milk not changed in reaction and not coagulated. On potato no growth for two weeks after which time a meagre whitish colony will form. No gas production in saccharose, lactose or dextrose broth, while nitrates are reduced to ammonia with no nitrite appearing. Indol production slight. Optimum temperature 33-34° C, with a minimum at 30° C. Pathogenicity: pathogenic for the horse when injected in the aqueous chamber. Non pathogenic for rabbit either by subcutaneous, intravenous or intraocular inoculation. Spore formation could not be demonstrated.

That the injection of non-infective material into the anterior chamber is without effect is shown by the innocuous and repeated transfers made during the course of the present investigation from the eye of one horse to the eye of another. General anesthesia was adopted in

Fig. 11. Dumps of Bacteria in Optic Nerve

these investigations in order to minimize undue trauma in the attempt to immobilize the eye ball during inoculation. In addition it was occasionally found necessary to adopt a slight local anesthesia to insure the immobility of the membrane nictitans.

On November 15, 1920, and old sound horse received 0.5cc of a suspension of a six-day-old culture of bacillus A in bouillon, in the anterior chamber of the left eye after removal of the aqueous. No apparent change was noticed during the 24 hours following inoculation, the temperature remaining normal, but after 12 hours there appeared an abundant purulent discharge, a complete clouding of the aqueous while the lids and conjunctiva because distinctly swollen and edematous. The temperature was still normal but the general appearance of the animal was below normal. Abundant lachrimation accompanied a purulent discharge. Two or three days after inoculation the general systemic symptoms subsided and the animal slowly returned to a higher level of vitality. The purulent discharge subsided somewhat fourteen days after inoculation together with the conjuntivitis. The corneo-sclerotic juncture retained nevertheless the highly congested appearance it had acquired earlier, the acqueous retained its cloudiness and so continued until January 13th, when it was found necessary to dispose of the animal due to the fact that it could no more use its molars in the process of mastication: old age.

Autopsy showed the cornea to be apparently normal to macroscopic examination the lens transparent connected to the ciliary by an intact suspensory ligament. The other structures of the eye were also found apparently normal. Samples taken aseptically from the aqueous and cultured in bouillon yielded the organism inoculated although the inoculation of this recovered form in the acqueous of another normal horse failed to reproduce the typical symptoms.

A second horse, inoculated February 24, 1921, with 0.5 cc. of a suspension of the same organism in sterile saline (case 7) showed in fifteen hours after inoculation a distinct congestion with distinct turbidity of the aqueous Lachrimation soon ensued and a strong turbidity of the aqueous made the lens invisible. The animal behaved normally, and retained an opaque aqueous up to March 20, 1921, when a clearing was incipient. The opacity slowly settled to the lower side of the anterior chamber, forming a crescent shaped deposit acquiring a yellowish tinge and on March 27 the aqueous has acquired its normal transparency. A recurrence of the pathological condition was nevertheless visible again on April 6, when an abundant lachrimation ensued and the acqueous became distinctly opaque for two or three days when it slowly regained its normal appearance. The animal was then allowed to run to pasture and showed no more pathologic symptoms for six months.

(To be continued in June issue.)

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Matters of Current Interest

(Continued from page 212)

and all products containing the health giving and growing elements of milk.

In Philadelphia one group of school children picked at random was found to average 13 pounds underweight. After a month of propaganda these same children gained nearly a thousand pounds. These propaganda have brought out the ugly fact that in spite of our great food resources, we are actually an under nourished people. As proof of this we only need refer to the 700,000 physically unfit men drafted for military service in 1917 and 1918. During the same period the consumption of milk changed in Philadelphia from 14,000,000 in 1918 to 17,000,000 in 1921 in spite of the hard times that prevailed during the latter year and the unprecedented good times with which all were blessed during the former.

Milk Consumption Too Low

These investigations show that the average milk consumption per capita is only a little more than a half pint per day when it should by right reach a quart per day. They show also that milk is as necessary as food for adults as it is for children, and also the deplorable fact that 28% of school children consume no milk at all, when in fact it is little less than criminal to deny the growing child the advantage of a proper ration.

While a great deal of good has already been done in this connection, both in regard to the physical welfare of the people and to the development of sound agriculture, the tremendous field for betterment of every mortal of the nation is just beginning to be opened up.

Where Does the Veterinarian Stand?

Where is the veterinarian arrayed in this nation-wide endeavor to help the people, animal husbandry and agriculture? The veterinary practitioner is on the right side or at least means to be found there, but he is put in the ignoble position of appearing to be on the other side by reason of the fact that he has allowed the veterinary profession to be branded as hostile to these uplifting movements. With the public health service everywhere recommending a greater consumption of milk for the good of the people, and the large agricultural interests preaching the same gospel to strengthen one of the nation's big industry, the veterinary profession with its mere handful of members, by its unwise, selfish propaganda is very rapidly making itself a nuisance others feel must be curbed, eliminated or at least made as impotent as the situation justifies. It is little less than ridiculous (silly is the better word) for us to draw swords against such big uplifting enterprises when in fact the motive is but a thin-veiled design of a few political job holders who by reason of their access to big audiences inflicted much harm not only to the agricultural interests but to all of the people by scaring consumers away from the milk products they have needed for normal development.

The same few who, right from the beginning of the tuberculosis scare, have seen fit to exaggerate proven facts now find it necessary to juggle with distorted statistics to keep themselves in the limelight at the expense of harmony between the veterinary practitioners and the live stock interests, and all without even a shadow of solicitation from anyone. It is all truly a shining example of throwing the proverbial monkey wrench into a smooth running machine—agriculture—by a profession from which a different attitude is expected.

Dr. M. E. Elzinga, who was elected president of the Western Michigan Veterinary Medical Ass'n, for the ensuing year, died suddenly at his residence, January 21. Dr. Elzinga was 47 years old, was born in Michigan, and had practiced in Grand Rapids for 22 years. He graduated from the Detroit Veterinary College in 1896 and has been a very active worker in association and promotional work among his colleagues. His loss is one that will be keenly felt, not only by his host of friends but by everyone who appreciates the worthiness of men who are loyal workers for the cause of practicing veterinarians.

Dr. M. J. Roimpe has located in Scotia, Nebraska, to which place he moved from North Luke, Nebraska.

THE REGULAR MONTHLY MEETING OF THE NEW YORK CITY VETERINARY ASSOCIATION

The regular monthly meeting of this Association was held in the College building on Wednesday, March 1st. It was one of the best meetings of this old Association that has been held in many a day, several visitors being present.

The speaker of the evening was Dr. D. C. Kimball of the University of Pennsylvania; his subject being pneumonia. He stated that he would speak principally on pneumonia in horses. Speaking of classification, he reviewed the various names and types that the human pathologist differentiates. He cited McFadyean's resume of the microscopical lesions found in the lungs of a horse affected with pneumonia, showing that we have the various types all manifest at the same time. Consequently, there is but one form pathologically.

Etiology

Dr. Kimball believes that all cases are due to infection.

Diagnosis

The clinician is greatly handicapped in cases of pneumonia, due to the fact that the apices are so often the parts of the lung that are most severely affected and out of the area of examination.

Treatment

Treatment resolves itself largely into good hygiene, plenty of fresh air, clean surroundings, and a dry stable, good nursing and mild stimulation. Mustard, he believes, is useful in all stages due to the fact that an affected lung really has areas of all stages. He reported the history of twenty hospital cases, a chart which was kept showing the marked effect in reducing temperature by the application of a liberal coating of mustard on the chest walls, the mustard being made into a thin paste with cold water. Speaking of tapping the chest, experience leads him to believe that it is a good safe treatment and not as dangerous as has been formerly supposed.

Many entered into the discussion. Dr. George Berns commended Dr. Kimball's address and agreed with him as to the value of counter irritation. Dr. Bern's experience has been that cases of simple pneumonia usually do well, but that complicated cases do not. He believes auscultation of much value, but percussion of little value.

Major Jewell Advocates Bacterins

Major Jewell was present as a visitor and cited some of his experience in treating pneumonia in the army. Intravenous injections of saline solution, injecting about a quart daily, gave splendid results in some cases, but he wished to impress the necessity of prophylaxis in handling horses in great numbers. He believes bacterins are of value if they can be given before the horse's resistence is lowered by shipping. After horses are gathered in numbers sanitation is the important factor.

Mustard No Good Says McKinney

Dr. W. J. McKinney told of a case of double pneumonia where counter irritants were used on the right side and not on the left, the horse being destroyed on the second day. The right lung showed the most severe lesion, indicating that mustard had been of no value or possibly harmful. Tapping has not been successful for him.

Gannett Likes Hygiene Best

Dr. R. W. Gannett believes early detection of lung infection and putting the case in the proper surroundings are important steps. President McKellar agrees very strongly with this view. Dr. C. W. Shaw gets most of his cases late. He relies upon stimulants, bacterins and sanitation. Bacterins in his hands have proved of much value.

Intraspinal Delivery of Antitetanic Serum

Dr. Charles Higgins spoke of his experiences in Canada in 1914 at the outbreak of war. All horses were given bacterins just as soon as they were purchased, using a streptococcic bacterin. This method kept the loss down very low. If serum is used it should be used early and in large quantities. In the human they use as much as 300 cc. as an initial injection, using it on the same principle as in treating tetanus.

Dr. Higgins told of the way Dr. Fowler of Canada treats his tetanus cases by injecting great quantities into the spinal canal. Unless enough serum is used to neutralize the toxins already present favorable results will not follow.

Clayton Likes the Old Nomenclature

Dr. O. E. McKim believes that pneumonias, as is the case with every disease, are due to tissue reaction. Influenza was mentioned by several of the speakers and Dr. C. E. Clayton stated that he questioned if we have influenza; that it is rather a blanket term. He believes a better name is epizootic cellulitis.

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ASSISTANT WANTED—In large equine city practice—able graduate with practical experience; good opportunity for right man. State past experience and salary expected. Address No. 676, care of VETERINARY MEDICINE, 4753 Grand Blvd., Chicago, Ill.

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WANTED—Graduate Veterinarian with several years experience wishes position as assistant with prospects of an interest. Address No. 677, care of VETERINARY MEDICINE.

WANTED—To buy established veterinary hospital preferably in the northeast states or in the eastern states or an established veterinary practice. Will pay cash. Address No. 674, care of VETERINARY MEDICINE, 4753 Grand Blvd., Chicago, Ill.

WANTED—Graduate veterinarian with several years experience wishes position as assistant. Address No. 673, care of VETERINARY MEDICINE, 4753 Grand Blvd., Chicago, Ill.

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DeVine's Hypothesis

Dr. J. F. DeVine believes that the general febrile conditions that are spoken of as catarrhal fever, influenza, etc., are in reality a septicemia unless they localize. Then they become more of a specific ailment such as pneumonia and enteritis. He believes also that the organisms causing these specific ailments depend upon symbiosis; septicemic conditions lowering the resistence of the animal allowing the more specific organisms such as the streptococci to produce pneumonia. We see this in the so called complicated cases of influenzas in horses which later develop into pneumonia and pleurisy. A striking illustration of it in cattle is stock yard pneumonia as well as the so called mixed infections in swine. It is common knowledge that before we had mixed infection bacterins that stock yard pneumonia always meant a high mortality, in the animals affected, and the spread of the disease in stables where they were brought in. Bacterial treatment has reduced the mortality in the affected animals so noticeably that no one that has had any experience with this disease would differ with this statement. It almost never spreads further in a stable if vaccination is promptly instituted.

Pyometra in a Bitch, by Dr. Blair

Under case report Dr. Reid Blair exhibited the uterus, tubes, and ovaries of an old English sheep bitch. She had been used as a show animal and later it was desired to breed her. She was bred several times unsuccessfully, when she developed pyometra which was about three years ago. She was treated with bacterins and apparently recovered; was bred again and supposed to be in whelp. She suddenly died and it was found that one of the Fallopian tubes had ruptured close to the ovary. The uterus was greatly distended with pus as were also the two oviducts. Dr. Blair had at one of the previous meeting called attention to the danger of diagnosing pyometra for pregnancy. This was a typical demonstration.

Message of Good Will from Veterinary Medicine

Mr. I. C. Brenner of Veterinary Medicine, Chicago, was present and was asked by the Chair to "say something." Brenner, who is "always there," complimented the society on its long history and the noted men that have taken part in the Association work for years. He expressed a wish that steps be taken to prepare a history of the veterinary profession of New York City. Mr. Brenner's wish was

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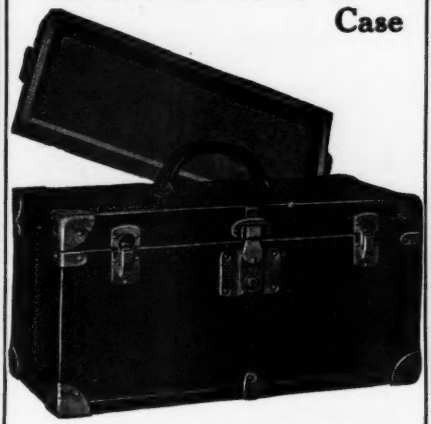

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favorably received and probably some day we shall have a history of the birth-place of the veterinary profession in America.

Dinsmore Not Asleep

A communication was read by Wayne Dinsmore, Secretary of the Horse Association in America, in reference to an article that has appeared in the New York City newspapers advocating the abolition of the horse on the Island of Manhattan by 1925. Dr. A. Silkman stated that we have seventy-five thousand horses in greater New York as against one hundred fifteen thousand in 1914.

CONFERENCE OF VETERINARIANS AT THE UNIVERSITY OF PENNSYLVANIA

On February 28 and March 1 a very interesting conference of Veterinarians was held at the School of Veterinary Medicine of the University of Pennsylvania. There were about 175 Veterinarians in attendance, largely from Pennsylvania, but many from New York, New Jersey, Delaware, Maryland, the District of Columbia, and Ohio. The program provided for the presentation of many phases of the problems connected with the swine and cattle industry by recognized authorities. The speakers covered their subjects in a masterly manner and the great interest of the audience was manifested by the lively discussions which followed.

Schroeber on Abortion Disease

On the opening day, Dr. E. C. Schroeber, of the U. S. Bureau of Animal Industry, delivered a paper entitled "The Present Status of Vaccination Against Abortion Disease of Cattle." He emphasized the necessity for more knowledge of the nature of the abortion bacillus before the subject can be lifted out of the experimental state in which it now is. He also said that tremendous doses of living cultures were necessary in attempting immunization; that an animal so treated would possibly be a spreader; and that there is no reason to believe that dead suspensions of the organism have any immunizing value. Dr. Schroeder told of his study of twenty-four (24) samples (representing five different firms) of anti-abortion vaccines obtained on the market. Of these:

15 contained only bacteria identified as the Bang bacillus.

2 contained other bacteria and the Bang bacillus.

7 contained many other bacteria and a spore.

His conclusions were that 44% of these samples were of doubtful value and 79% were not only doubtful but worthless and dangerous.

Udder Diseases, by Turner

Following this well discussed paper, Dr. John P. Turner of Washington, D. C., gave a very practical paper on "Experience in Practice with Udder Troubles." Dr. Turner covered the subject thoroughly, giving sound, practical advice on the handling of every possible disease of the udder. He emphasized the importance of preventing mastitis and advocated a large, clean, disinfected maternity stall for parturient animals; cutting off the hanging fetal membranes and eliminating sucking calves when the teats are sore. He questioned the presence of contagious mastitis in this country, most cases being sporadic.

Diagnosis of Pregnancy, by Boyd

In the afternoon session, Dr. W. L. Boyd of the University of Minnesota talked on "The Diagnosis of Pregnancy in Cows," and paved the way for the subject of sterility which he discussed the next day. He does not lay so much stress on the pulsation in the uterine arteries in diagnosing pregnancy as on the mucous plug in the cervix, the corpus luteum and the changes in the uterus. Ballottement is not possible before seven to seven and one-half months, according to Dr. Boyd, who also said that in heifers accidentally bred or if for other reasons it is desirable to terminate pregnancy, it may be accomplished at about the second month by expressing the corpus luteum, after which abortion will follow in about three days.

Sound Advice on White Scours

A paper on "Hygiene and Sanitation in the Care of Young Animals" was presented by Dr. E. S. Deubler of Penhurst Farms, Narberth, Pa. He spoke particularly of handling white scours and told how he had kept his calves free from its ravages by building maternity stalls with tight partitions to the ceiling and disinfecting the same after each calving with formaldehyde gas. He also urged the necessity of keeping heifers away from abortion infection for six months before breeding and until after parturition.

Evening Session

In the evening the conference was delightfully entertained, first by Dr. Edward Lodholz, professor of veterinary physiology at the Uni-

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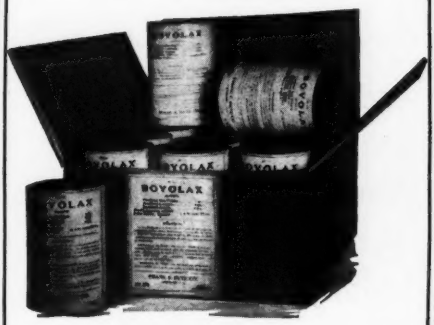

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versity of Pennsylvania, on "Physiology of the Fetus." Following this entertaining lecture a smoker was given by the Alumni Society of the school.

Lecture on Bovine Sterility (Illustrated)

The second day's program started with a lantern slide talk by Dr. Boyd on "The Pathology of Bovine Sterility." He explained thoroughly the slides which covered every conceivable pathological condition related to the subject. Later, Dr. Boyd gave a practical demonstration of examining and treating sterility on five cases provided for the purpose. He handled the subject in a convincing manner, answering innumerable questions to the satisfaction of all. In discussing this subject, Dr. W. H. Ridge, Pennsylvania Bureau of Animal Industry, gave an interesting talk on prevention. He believes that the douching of all cows with a one and one-half per cent solution of Lugol's iodin from one week to ten days after calving is not injurious but beneficial, and submitted charts of the breeding records of three herds of several hundred animals which he had been treating in this manner for four years, and the proof seemed conclusive that sterility had been reduced to a minimum.

Adhered Placenta by a New Jersey Colleague

Dr. George W. Grim, of Plainsboro, N. J., read a paper on "Treatment of Retained Placenta in the Cow." His experience covered 107 cases. Many different methods were reported with the results attending. The conclusion seemed to be that the membranes should be removed as soon as they can be readily separated from the cotyledons. In a number of cases he took them away in twenty-four hours with satisfactory results.

Following Dr. Niles' interesting and instructive talk, Dr. H. H. Havner of State College, Pennsylvania, spoke on "The Swine Industry in Pennsylvania. He explained how the State College Extension Department is developing the swine industry in Pennsylvania and pointed out the difference in the status of this industry in Pennsylvania and Iowa, showing that improvement must be accomplished by community effort, because rarely does one farmer have enough sows to warrant the purchase of a high-class pure-bred boar.

Numerous feeding trials which had been conducted in various parts of the state were explained and he showed that farmers who had marketed their corn through their hogs had received twice the market price for it.

It is regrettable that space does not permit the reporting of the valuable and instructive discussions which followed the papers. The conference was considered a great success by the many who attended.

Praises the Veterinary School

Acting-Provost Dr. J. H. Penniman gave the attending veterinarians a very cordial welcome and spoke in a most appreciative manner of the work they are doing and the importance of it. He referred in very flattering terms to the veterinary school of the University of Pennsylvania and to the fact that the university is proud of its scientific achievements.

Hassall Awarded Steel Memorial Medal

Dr. Albert Hassall of the Zoological Division of the Bureau of Animal Industry has recently been notified that the Steel Memorial Medal for 1921 has been awarded to him by the Council of the Royal College of Veterinary Surgeons. This medal is awarded at intervals of three years on the recommendation of the Honors and Prizes Committee as an award for scientific or literary work of merit in connection with the veterinary profession.

Dr. Hassall has been in the Bureau of Animal Industry for the last thirty-five years, and in the course of that time in addition to publishing numerous papers on parasitology, has built up an Index Catalogue of Medical and Veterinary Zoology which is the most complete work of the sort in existence. The author's catalogue was published as a joint work of Dr. Ch. Wardell Stiles and Dr. Hassall as Bureau of Animal Industry Bulletin 39, and the subject catalogues covering the cestodes, trematodes and nematodes have been published by these authors as bulletins of the Hygienic Laboratory, U. S. Public Health Service. These publications constitute very valuable reference works which are in great demand both in this country and abroad by zoologists, veterinarians and physicians.

Dr. Gauss has moved from Marshall, Michigan, to Homer, Michigan, where he will continue practice.

Dr. L. A. Ruff, of Marshall, Michigan, spent the winter in Florida, for a well earned vacation.

Dr. J. S. Koen, of Bloomington, Ill., made a hurried trip to Kansas City recently.

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The more he saw the less he spoke,
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OLD COWS MADE FRISKY BY PIG GLAND PROCESS

Harrisburg, Pa., Thursday.—The principle employed in monkey glands for rejuvenation has been used with success in experiments on cows, it was announced by officials of the State Bureau of Animal Industry. Eleven dairy cows which had become grandmothers many times were made young and frisky by a serum extracted from glands of sows, the statement said. The old cows were given the serum in capsules and did not develop any traits of pigs.

They were reported by observers to have become useful again.

Dr. F. A. McLean, an officer of the Veterinary Corps during the world war, is now a practitioner at Griggsville, Illinois.

The state veterinarians' convention of Idaho, will be held at Boise City, May 10, 1922, with Dr. J. V. Adams, Director of the Bureau of Animal Industry, as the presiding officer.

Dr. W. A. Bisbee has been appointed keeper of the Brookside Park Zoo, of Cleveland, Ohio, with a salary of $1,500 a year.

Dr. Ray W. Hughes, of Berthold, N. Dakota, has moved to Frazee, Minnesota, to escape the tyranny of seven successive years of crop failures, he says, that occurred at his former location.

Dr. L. L. Lowenberg purchased the practice of Dr. J. C. Johansen of Northwood, Iowa. and has moved with his family to the new location.

Dr. W. H. H. Miller, Director of Public Registration and Education, and Dr. N. O. Bourque, were indicted by the Cook County, Illinois, grand jury for alleged irregularities in connection with the issuance of licenses by that board. The veterinary board itself is not under suspicion as the alleged irregularities are said to have been committed after the examiners' reports are turned in.

Dr. F. A. Laird, state veterinarian of Illinois, has issued from his office copies of a Municipal Milk Regulation that according to the attorney-general's opinion will stand the test of constitutionality for the information of villages and cities that desire to enact such regulations.

Dr. M. J. Roimpe has located in Scotia, Nebraska, to which place he moved from North Luke, Nebraska.

Dr. J. W. Murdock, formerly in practice at Denison, Iowa, has entered the B. A. I. service and is stationed at Omaha, Nebr.

Dr. W. R. Barnard of Belleville, Kans., is a breeder of Hampshire swine. He reports several cases of abortion in swine in his community.

Dr. J. F. Hemphill of Clay Center, Kans., has an extensive swine practice. He was recently called to treat 2000 swine in which necrotic enteritis had caused extensive losses.

Dr. B. F. Mills of Denison, Iowa, is fast recuperating from a serious attack of appendicitis. The doctor was operated upon by the Mayos at Rochester, Minn.

Dr. J. C. Bowman of Hebron, Nebr., was called to Cottonwood Falls, Kans., recently because of the death of his mother. Veterinary Medicine extends sympathy to the doctor and family.

Dr. O. O. Wolf of Ottawa, Kans., represented the Kansas Live Stock Association at the hearing of the Mistletoe Yards at the Live Stock Exchange in Kansas City during the latter part of March.

Dr. C. R. Diller, Formerly of Marshalltown, Iowa, where he conducted a general practice for several years, recently moved to Mercedes, Tex., where he is interested in practice and real estate business.

Dr. A. Eichhorn has been appointed an honorary commissioner of the U. S. Department of Agriculture. His duties will include the investigation of conditions of the Live Stock industry of Great Britain, France, Belgium, Germany, Hungary, Austria, Italy, Spain, and other European countries.

Dr. Latimer, of Springfield, Minnesota, makes a specialty of hogs and chickens and makes no complaint that practice is not good.

Dr. H. W. Lyle, state veterinarian of Oregon, reports that the tuberculosis indemnity appropriation of that state for 1922 has been exhausted.

Drs. Dennison and Burgess, of Grand Forks, North Dakota, are constructing a new veteri-

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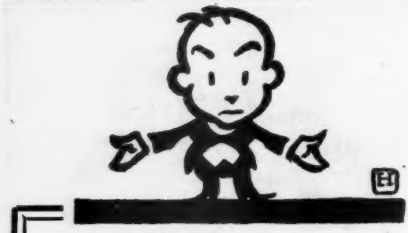

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nary hospital in that city. It will be 64x100 and will be used as a sales barn as well as a veterinary hospital.

Dr. S. E. Hershey, of Charleston, West Virginia, has recently moved into a brand new veterinary hospital equipped for attention to all species of domesticated animals. It has ten single stalls, three box stalls, operating room with table and stocks, and kennels for 24 dogs, six for cats, and two for isolation. Photographs of this splendid establishment will be reproduced in a coming issue.

Dr. H. Paul Gray, formerly of New York, has opened up a practice at Woodstock, Illinois.

Dr. E. F. Lowery, president of the Hawkeye Veterinary Association of Central Illinois, addressed 200 farmers at Sycamore, in March, on Farm Sanitation and the Prevention of Swine Diseases.

Dr. J. R. Hockenbury, formerly of Renwick, Iowa, a graduate of the St. Joseph Veterinary College, is now engaged in practice at Metmora, Illinois.

Dr. R. Gillies, inspector in charge of the Bureau of Animal Industry in St. Joseph, Mo. addressed the Contract Club of that city on the importance of Eradicating Tuberculosis from Cattle.

Dr. J. F. DeVine of Goshen, N. Y., was one of the principal speakers at the Southeastern States Veterinary Medical Association at Nashville, Tenn. He also conducted an interesting clinic in which he demonstrated the proper technique for overcoming sterility in cows.

Dr. W. G. Gregory of Ft. Worth, Texas, recently made a business trip to Kansas City and St. Joseph, Mo. The Doctor reports business good in Texas and said there were many good locations for practitioners in the Lone Star State.

Dr. F. F. Brown, one of the best known practitioners in Kansas City, Mo., recently submitted to an operation, and will be confined to the hospital for three or four weeks. All join in wishing him a speedy and complete recovery.

Dr. J. C. Green, formerly of Redfield, Kansas, is now in general practice at Bronson, Kans.

Dr. F. F. Fischer, a practitioner of Bosworth, Mo., recently accepted a position with the B. A. I.

Dr. J. L. Hearn, of Texarkana, found time between calls to make a hurried trip to Kansas City recently.

Dr. Louis F. Heydecker is now located at Recluse, Wyo., where he is in general practice and manager of a homestead.

Dr. Laird, State Veterinarian, recently stated that the Illinois farmers were losing from 30 to 40 per cent of their spring pig crop from abortion.

Mr. Ehle, father of Dr. A. M. Ehle of Oak Grove, Mo., died on March 17th. Burial was in the Mt. Washington Cemetery, Kansas City, Mo.

Dr. J. I. Gibson, former State Veterinarian of Iowa, is now Live Stock Commissioner of the Live Stock Exchange of St. Joseph, Mo.

Dr. Wm. Osterholtz of Shelby, Iowa, has been having considerable experience with swine abortion. He reports excessive losses from this disease in that community.

Dr. Arthur Graves, who has been in B. A. I. service since 1917 resigned on March 15th. The Doctor expects to do some general practice from his farm on Route 1, Harrisonville, Mo.

Dr. J. C. Flynn, small animal practitioner of Kansas City, attended the Illmo Veterinary Medical Association in East St. Louis on March 15th. The Doctor also investigated the small animal clinic facilities for the annual meeting of the A. V. M. A.

Dr. Geo. N. Russell of Lawrence, Kansas, was in Kansas City on March 7th to purchase a Ford to replace one that had burned. He reports the prevalence of abortion in swine in that territory.

Dr. George Paul, Renville, Minnesota, has moved to Melrose, Minnesota, to continue practice.

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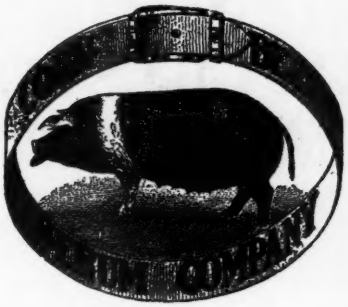

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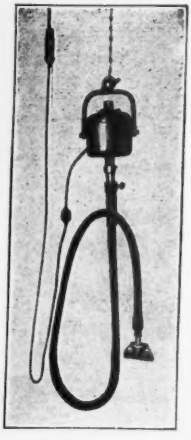

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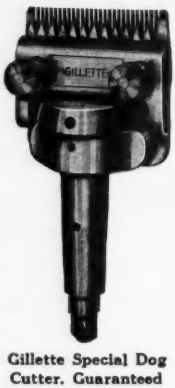

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In order to increase the efficiency of its veterinary department Ohio has districted the state into twenty districts, with a view of assigning one assistant state veterinarian to each district. This movement is said to be taken in the interest of economy and rapidity of progress in the work.

Dr. John William T. Stewart, of Franklin, Illinois, died at his home in that city, Tuesday, March 14. He was born in 1851 and had been a practicing veterinarian for more than 30 years. He is survived by a widow, three daughters and one son.

Dr. J. I. Gibson, who has recently been appointed as veterinarian for the Live Stock Exchange, of St. Joseph, Missouri, is attacking his job with a vim that characterizes the man using the propaganda of the United States Dept. of Agriculture in his field work among the farmers.

Dr. Mark White, of Chicago, who is a brother of Dr. George R. White, state veterinarian of Tennessee, was united in marriage to Mrs. Pauline Porter-Meuirheah also of Chicago.

Dr. J. C. Johansen, formerly of Northwood, Iowa, has moved to Ruskin, Nebraska, where he will open an office for general practice.

Dr. Mark Larkin, of East St. Louis, Illinois, was shot and instantly killed by Dr. J. D. Hawkins, whom he had attacked with homicidal intent, and who was immediately exonerated by a coroner's jury.

The Michigan State Board of Veterinary Examiners have issued through the public press a warning to all persons not to engage in the practice of veterinary medicine and surgery, unlawfully, drawing attention to the fact that violation of the veterinary practice act is a misdemeanor and punishable by fine or imprisonment.

Dr. R. W. Langstaff, of Colfax, Illinois, is a recent appointee to the position of assistant state veterinarian of Illinois.

Dr. J. H. Lynch, of Fonda, Iowa, addressed the Northwestern Iowa Veterinary Medical Association, March 23, on the subject of Co-operation, bringing out his view about the need of re-organizing the American Veterinary Medical Association.

TENTATIVE PROGRAM FOR 1922 MEETING OF A. V. M. A., ST. LOUIS, MO.

Monday, August 28, Opening and General Session.

Monday evening, President's reception.

Tuesday morning, August 29th, Section meetings.

Tuesday afternoon, General Session and Election of Officers.

Tuesday evening there will be a Smoker and Round Table at the Planters Hotel, with entertainment.

Wednesday, August 30th, and Thursday, August 31st, there will be clinics both for large and small animals at East St. Louis. The large animal clinic will be in charge of Dr. H. E. Kingman with Dr. S. L. Stewart as assistant. Dr. J. C. Flynn will have charge of the Canine and Feline Clinic. At the Clinics a definite program is being arranged and each part well carried out on a definite time.

On Thursday evening there will be sectional meetings and on Friday, September 1st, general sessions.

It is probable that the Sections on Sanitary Science and Police and Education and Research will have programs at St. Louis, while the clinics are being held at East St. Louis, so that those who are not interested in the clinics will have an opportunity of attending interesting Sectional meetings.—N. S. Mayo, Secretary.

(Concluded from Page 224)

1st. Building up immunity by bacterins, beginning as soon as the animal has calved. (Bacterial treatment today has been so improved as to be almost a specific.)

2nd. Keeping down putrifaction.

In our own practice we rely upon plenty of hot douching early and so mechanically cleanse the uterus as much as we can. This is to be followed by some mild non-irritating agent to control putrifaction (the less weight the better) such as boric acid, iodoform and thymol.

Others prefer other methods. But let them be what they may, the aim should be to get dead material, that acts as a medium for the development of the secondary invaders, out of the uterus as quickly as possible, without injury to the mucosa or opening of blood vessels and applying such agents to the membranes as will keep down putrifaction and still not injure the lining of the uterus. If the principle is carried out, the technique is probably the least important.

Paralysis In Swine

Animals in as Serious a Condition as Shown Here Have Responded Quickly to VITAMINERAL Treatment

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Hog Cholera Virus

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(Continued from Page 238)

Some have started to carry out the plan, but after they have a herd of good pigs they get tired of hauling water, and have made the mistake of permitting the pigs to go back to the dirty old hog lot for water and thus undo the good they have done. I want to emphasize the point that if you are going to adopt this plan of sanitation, carry it through until the pigs are at least four or five months of age before you think of letting them go back to the dirty old hog lot.

The motion pictures we are going to show are merely a reproduction of the work that has been done in McLean County, and it might have been done somewhere else, but it was done in McLean County because they asked us to come and they were willing to co-operate with us in our experimental work.

Viability of Eggs Not Destroyed by Freezing

Gentlemen, one question has been asked me about the effects of freezing on the eggs. I might say I have taken the eggs and placed them in a freezer at two to sixteen degrees below zero and held them there for forty days; then took them out, put them in the proper medium, and they went ahead and developed active embryos inside; so cold weather hasn't much effect on them.

Incubation

I have also been asked how long it takes the eggs to develop to the infective stage. I might say it depends on the temperature. At a temperature around seventy with proper oxygen supply and moisture you will have active embryos inside the eggshell at the end of three weeks. If the temperature is a little lower than seventy, they will not develop so fast. Around seventy-five to ninety degrees is a mighty good temperature for development and you will get plenty of active embryos.

Dr. Miller: I would like to know how long these eggs are capable of living in case they are not picked up. Have you determined that?

Dr. Raffensperger: I have not determined that in soil. I have kept them in a formaldehyde solution two years and they were still living. We have records where they were kept five years.

Dr. Miller: How much heat does it take to kill the larvae?

Dr. Raffensperger: Just roughly, around eighty Centigrade for half a minute will do the job.

Dr. Miller: What effect does drying have?

Dr. Raffensperger: They will stand a great deal of desiccation. You do not get real desiccation in the pasture or manure pile or dirty hog lots. After keeping them in a dry condition in the incubator at a temperature of twenty-three to twenty-five degrees Centigrade for thirty days, and then adding moisture, I obtained no cleavage.

Dr. Kinsley: How large are the larvae?

Dr. Raffensperger: When they first come out of the shell they are 0.2 to 0.3 millimeter in length; that is, about one-fourth of a millimeter, and when they pass out of the lungs they are one to 2.5 millimeters; commonly 1.5 millimeters.

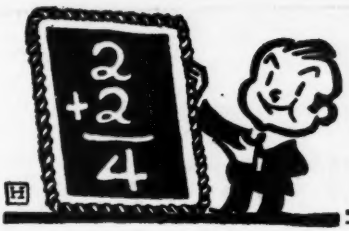
DR. R. W. HICKMAN, QUARANTINE CHIEF, RETIRES

Washington, D. C., March 31.—Dr. R. W. Hickman, chief of the Quarantine Division, Bureau of Animal Industry, retired from active Federal service today. For the last 34 years he had performed varied inspection and administrative duties in behalf of the live-stock industry. Dr. Hickman took an active part in the complete eradication, from the United States, of pleuropneumonia, a serious contagious disease affecting cattle. Following that work he organized the inspection at Chicago, of cattle for export. He has also served on committees instrumental in placing the work of veterinary colleges on a high plane of instruction and equipment.

Though a pharmacist, graduate veterinarian and a specialist in veterinary education, Dr. Hickman is best known to the public for his services in administering the Federal quarantine which prevents the introduction of animal diseases from abroad. He has drafted or revised most of the requirements regarding the export and import movement of live stock and is the author of important contributions to veterinary literature.

Owing to his activity and vigor, Dr. Hickman's retirement under the age clause of the Federal retirement act was a surprise to many of his associates. Dr. G. W. Pope, recently assistant, has been designated as acting chief of the Division.

(Press Service, U. S. Department of Agriculture.)



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Meeting Pennsylvania State Veterinary Medical Association

The Pennsylvania State Veterinary Medical Association held its 1922 meeting at Harrisburg, January 24th and 25th. The week of January 23d is known as Agricultural Week in Pennsylvania, and the Penna. State Vet. Med. Assn., being one of the Allied Agricultural Associations, holds its meetings at the same time that the other Allied Organizations are holding their meetings.

Holding our meetings at the same time that the other Organizations are in session, has a distinct advantage of bringing the practitioners of Pennsylvania into close contact with the live stock owners, and gives the stock owners an opportunity to see that the Veterinarians are well organized and a representative group of men who are taking their proper places in agricultural activities.

Pennsylvania meetings are very well attended. Our usual place of meeting would have accommodated our own number, but the attendance had been increased to such an extent by live stock men, that this year the committee of arrangements secured the Hall of the House of Representatives, in the Capitol Building, for the Veterinary Medical Association. This Hall was filled to capacity on the second day of our meeting.

The programme, as published in former issues of the journals, was carried out to its entirity. Papers of every day interest to practitioners were presented by practitioners, and every section of the State was represented. This was made possible by inviting the officers of each Veterinary Club in this State to designate one man to present a paper at the State Meeting and two men to discuss their fellow-member's paper. Any success that the meeting may have attained is due to the good co-operation of the men appearing on the programme.

It has been the practice of our Association to publish the proceedings of our Annual Meetings and it is hoped that means will be divised whereby the 1922 proceedings may be published. If this is not accomplished, in a single publication, it may be found possible to publish the papers through other channels.

Election of Officers resulted as follows:

President, E. E. Bittles, Waterford; Recording Secretary, C. S. Rockwell, Philadelphia; Vice-Presidents, H. B. Roshon, Reading, B. M. Beattie, Chambersburg, M. A. Davis, Troy; Treasurer, Thomas Kelly, Philadelphia; Corresponding Secretary, R. M. Staley, Philadelphia; Trustees, John W. Adams, Chairman, Philadelphia; H. E. Bender, Litiz; L. A. Kline Philadelphia; John Turner, Wellsboro.

R. M. Staley, Sec'y.

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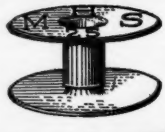

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